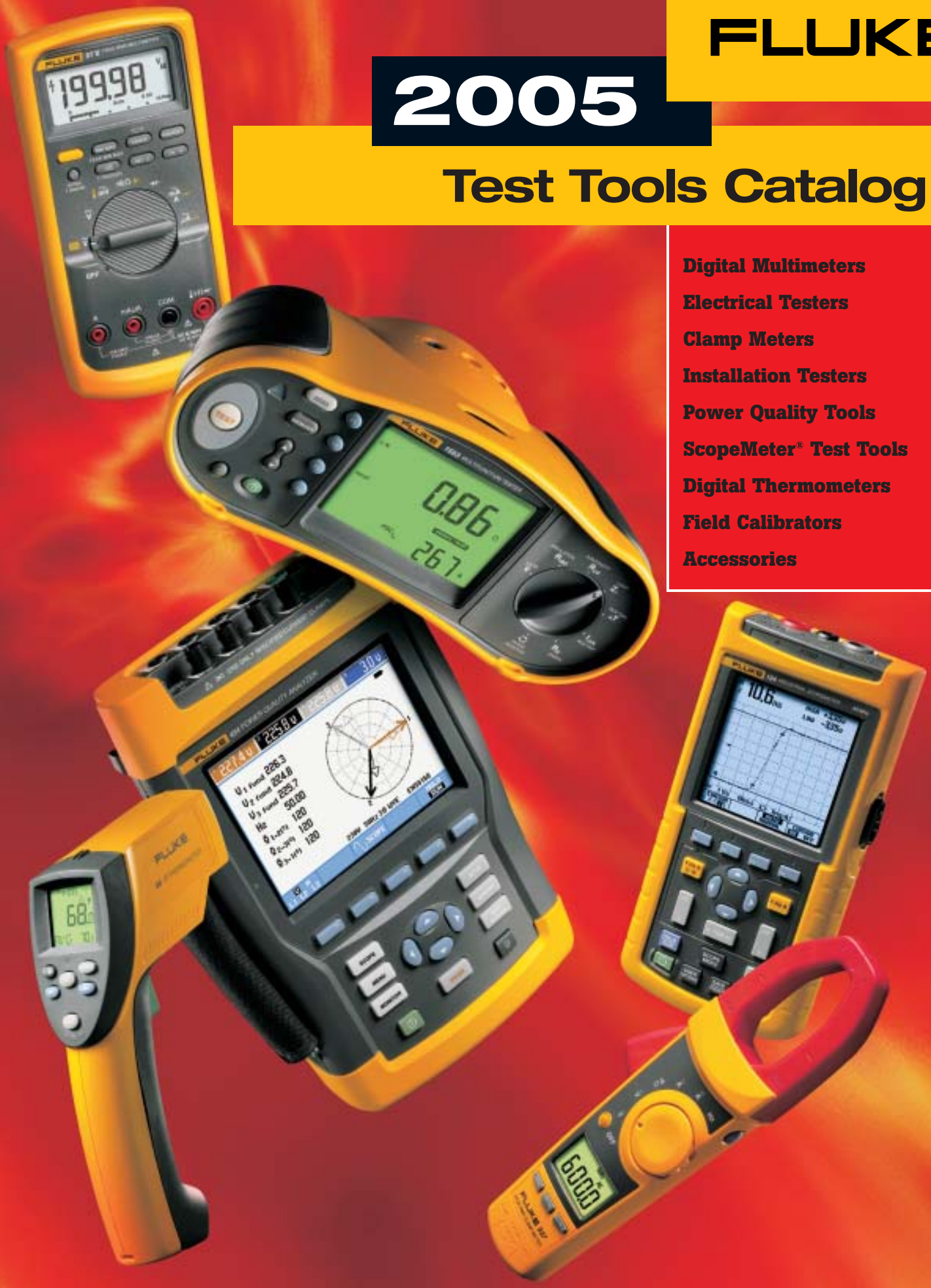
FLUKE®

2005

Test Tools Catalog

- Digital Multimeters
- Electrical Testers
- Clamp Meters
- Installation Testers
- Power Quality Tools
- ScopeMeter® Test Tools
- Digital Thermometers
- Field Calibrators
- Accessories



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Other catalogs from Fluke

In addition to the products featured in this Test Tools Catalog, Fluke also offers a variety of other products, an overview of which is shown in the following catalogs.

Fluke Precision Measurement products

Total Solutions in Precision Measurement

A variety of products covering DC/LF Electrical Calibration, Power Calibration, Calibration Software, Pressure Calibration, Time and Frequency, Temperature and Humidity Calibration including Hart Scientific, as well as Data Acquisition and General Purpose Test products like arbitrary waveform generators and VXI products.

To get a copy, please click "Request a catalog" on your local Fluke web site.

Fluke Networks products

Network SuperVision Solutions for the Copper and Fiber Cabling Infrastructure.

The most comprehensive line of premises network testing tools for the inspection, verification, certification and documentation of copper and fiber optic cabling systems.

Network SuperVision Solutions for the testing, monitoring and analysis of enterprise networks.

A complete line of handheld network testers for fast and efficient problem solving, maintenance and troubleshooting, as well as a line of products for distributed network management, analysis and monitoring.

To get a copy, please contact the local Fluke Networks sales organization: **www.flukenetworks.com/contact**.

Fluke. *Keeping your world up and running.*

Fluke Web and Electronic Newsletter

Fluke web

Complete information
The most complete and in-depth resource for information on Fluke's products and services including:
- Product information
- Virtual product demonstrations
- Extended specifications
- Application notes
- Product manuals
- Service information
- What's new
- Promotions
- Prices
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Find information fast
To quickly find more information on the Fluke products, use the "Search by model" box in the top left corner of our web site. All you have to do is type in the model number.

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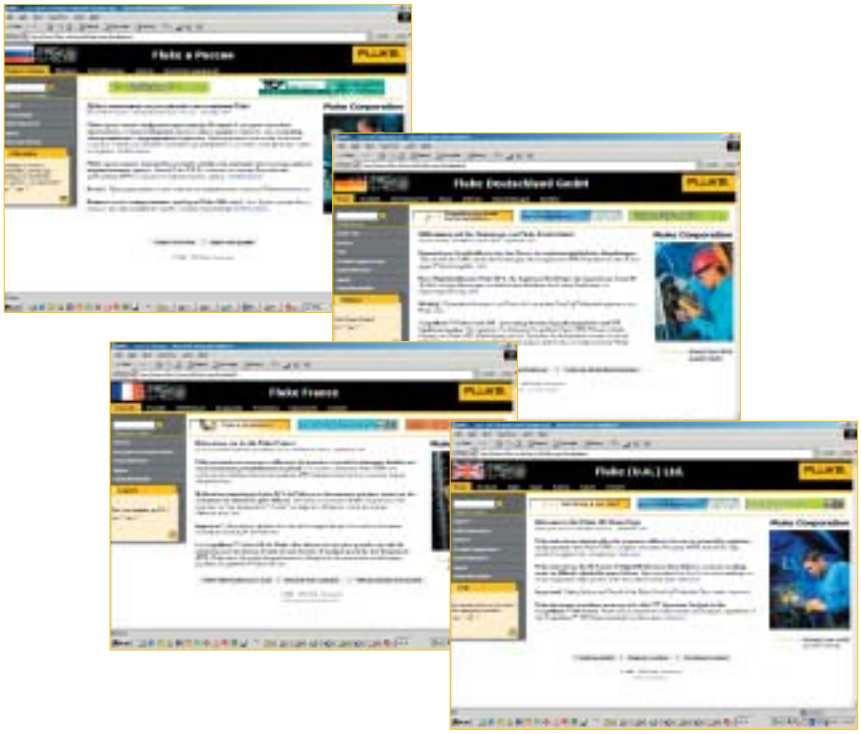
IE: www.fluke.ie
Worldwide: www.fluke.com



Fluke web sites are available in all countries around the world and in 14 different languages.

Electronic Newsletter

E-Test-it! is Fluke's regular news publication for professional test tool users. It is electronically available 6 times per year. You will be the first to hear about:

- New Fluke products
- The latest actions and promotions from Fluke
- How to get more out of Fluke tools
- How to use Fluke tools better in your application
- Exclusive offers, promotions and discounts on Fluke Merchandizing
- Exclusive offers on Fluke ex-demo equipment

E-Test-it! is free of charge. If at any point in time you do not want to receive E-Test-it! anymore, you can unsubscribe with a simple mouse click. E-Test-it! is small in size (on average about 12 KB) and does not fill up your mailbox or take long to download.

Try it now and sign-up for your FREE e-Test-it! subscription.
Go to the Fluke web site and fill in the on-line subscription form.

New from Fluke

Fluke 80 Series V Digital Multimeters

The Fluke 87V has a unique function for accurate voltage and frequency measurements on adjustable speed motor drives.

See page 16.

Fluke 88V/A Automotive Meter Combo Kit

This complete automotive diagnostic package offers virtually everything you need in an automotive multimeter.

See page 22.

T100 Series Voltage/Continuity Testers

All three models offer a patented three-phase rotation detection system, providing quick phase rotation indication.

See page 27.

Not available in all countries.

Fluke 430 Series three-phase Power Quality Analyzers

These rugged and easy-to-use three-phase Power Quality Analyzers pinpoint power quality problems faster, safer and in greater detail. They include the innovative AutoTrend and System-Monitor features.

See page 38.

Fluke 60 Series Infrared Thermometers

Pistol grip thermometers with laser guided sighting system for easy targeting with 1% accuracy.

See page 49.

New from Fluke

i400/i400s Current Clamps

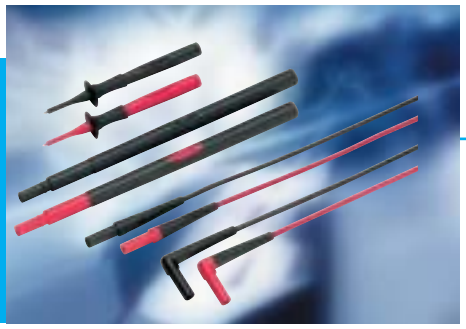
The i400 and i400s are 400 A AC Current Clamps with a unique CAT IV safety rating (600 V CAT IV/1000 V CAT III) and can therefore be used at virtually all power connections and outlets in low-voltage power distribution systems.

See page 66.

LVD1 Volt Light

Non-contact AC voltage detector and LED flashlight combined in one convenient, compact design. With exclusive dual-sensitivity.

See page 72.



TL238 High Energy Test Lead Kit

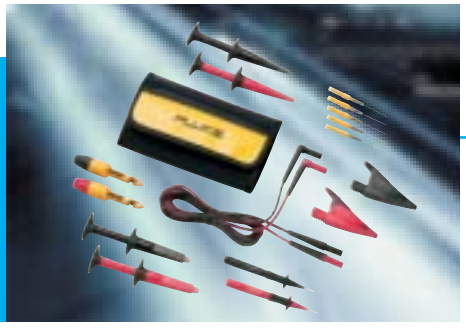
An accessory kit especially designed for working in high energy environments. The SureGrip™ Test Probe has only 4 mm of exposed metal at the tip.

See page 62.

H80M Holster + Magnetic Hanger

Now 80 Series owners can benefit from the Fluke Magnetic Hanging System. The easy-to-clean, snap-on holster absorbs shocks and protects your DMM, and is especially designed to hang from just about any metal surface.

See page 71.



Automotive Accessoires

A new line of accessories designed specifically for use in the automotive environment. They are also designed to work with electrical systems up to 60 V DC.

See page 65.

L205 and L206 Hat Lights

Attach it to a hat for all the light you need.

See page 72.

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Application/ Background Stories

As part of our commitment to supporting you in your work we do more than just design and manufacture rugged and versatile test tools: we also provide detailed background information to help you choose the right instrument and offer advice on using it effectively and safely. You can download all Application Notes from the product information pages on our web site.

Can you trust your meter reading ?

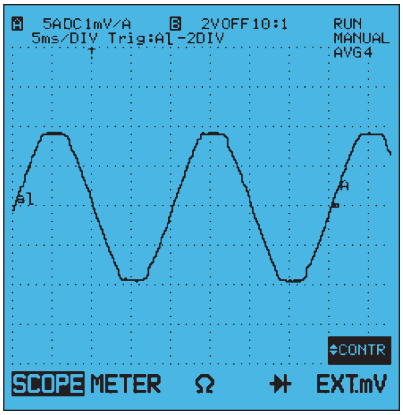


Fig 1. Current waveform of a linear load.

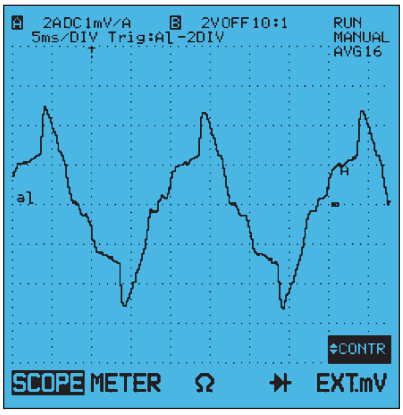


Fig 2. Current waveform of a non-linear load.

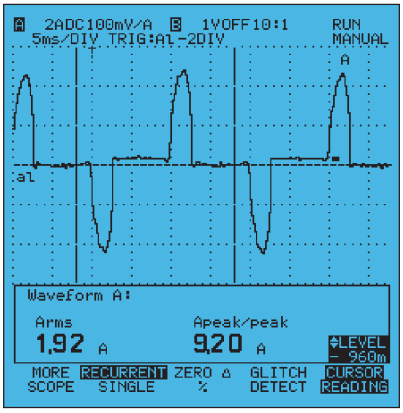


Fig 3. Current waveform of a PC.

Measuring accurately is a difficult job in today's industrial plants and offices. More and more personal computers, adjustable speed drives and other types of equipment that draw current in short pulses rather than at a steady level come on line every day. Equipment like this can cause the readings of conventional average-responding meters to be at least inaccurate. If you have ever experienced blown fuses without any clear cause, then maybe your meter is to blame.

Average-responding

When people talk about values of AC currents, they normally mean the effective heating or RMS (Root Mean Square) value of the current. This value is equivalent to a DC current with the same heating value as the AC current which is being measured. The most common way to measure this RMS value with a meter is to rectify the AC current, determine the average value of this rectified signal and then multiply the result by a factor 1.1. This factor represents the constant relationship between the average and RMS values of a perfect sinewave. However, if the waveform is not a perfect sinewave, this relationship no longer applies. This is why average responding meters often give incorrect readings when measuring currents in today's power systems.

Linear and non-linear loads

Linear loads - consisting purely of resistors, coils and capacitors - always draw a sinewave current, so there is no measurement problem (see fig.1). But non-linear loads like adjustable frequency drives and office equipment power supplies, draw distorted current waveforms (see fig 2 and 3). Measuring the RMS value of these distorted currents with an average-responding meter could give you readings which are up to 50% too low (see fig. 4), leaving you wondering why your 14A fuse blows continuously while the current according to your meter is only 10A.

True RMS

To measure such distorted current waveforms, you could first check the waveform with a waveform capturing device, and only use an average responding meter if the waveform is a perfect sinewave.
Or alternatively you could take no chances by always using a true RMS meter.
A modern true RMS meter uses an electronic measurement technique to provide you with the real effective value of an AC current, no matter if the waveform of the current is a perfect sinewave or a distorted waveform. As long as it is within the meter's crest factor and bandwidth specification.

What about voltage measurements?

What is valid for current measurements in today's power systems also is true for voltage measurements in many industrial and electronic applications. Often voltage waveforms are not perfect sinewaves which will result in incorrect readings with average responding meters. Therefore it is recommended to always use True-RMS responding meters for both voltage and current measurements.

Type Of Meter	Measuring Circuit	Response To Sine Wave	Response To Square Wave	Response To Distorted Wave
Average-responding	Multiplies rectified average by 1.1	Correct	10% high	Up to 50% low
True-RMS-responding	RMS-calculating converter calculates heating value	Correct	Correct	Correct

Fig 4. Comparing the Performance of Average-Responding and True-rms Responding Meters.

True RMS

Fluke: Where safety is built in

As distribution systems and loads become more complex, the possibilities of transient overvoltages increase. Motors, capacitors and power conversion equipment such as variable speed drives can be prime generators of spikes. Lightning strikes on outdoor transmission lines also cause extremely hazardous high-energy transients. If you're taking measurements on electrical systems, these transients are "invisible" and largely unavoidable hazards. They occur regularly on low-voltage power circuits, and can reach peak values in the many thousands of volts. To protect you against transients, safety must be built into the test equipment.

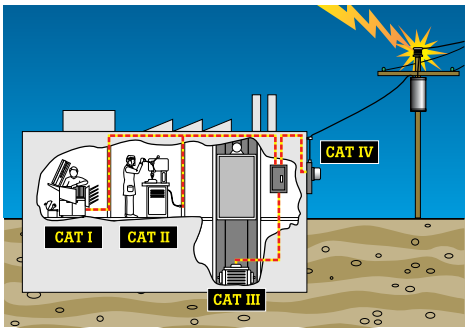


Figure 1. Understanding categories: location

Who Develops Safety Standards?

The IEC (International Electrotechnical Commission) develops international general standards for safety of electrical equipment for measurement, control and laboratory use. IEC61010-1 is used as the basis for the following national standards:

- US ANSI/ISA-S82.01-94
- Canada CAN C22.2 No.1010.1-92
- Europe EN61010-1:2001

Overvoltage Installation Categories

IEC61010-1 specifies categories of overvoltage based on the distance the piece of equipment is from the power source (see Fig. 1 and Table 1) and the natural damping of transient energy that occurs in an electrical distribution system. Higher categories are closer to the power source and require more protection.
Within each installation category there are *voltage* classifications. It is the combination of installation category and voltage classification which determines the maximum transient withstand capability of the instrument.

IEC 61010 test procedures take into account three main criteria: steady-state voltage, peak impulse transient voltage and source impedance. These three criteria together will tell you a multimeter's *true voltage withstand value.*

Within a category, a higher working voltage" (steadystate voltage) is associated with a higher transient, as would be expected. For example, a CAT III 600 V meter is tested with 6000 V transients while a CAT III 1000 V meter is tested with 8000 V transients. So far, so good. What is not as obvious is the difference between the 6000 V transient for CAT III 600 V and the 6000 V transient for CAT II 1000 V. They are not the same. This is where the source impedance comes in. Ohm's Law (Amps = Volts/Ohms) tells us that the 2 Ω test source for CAT III has six times the current of the 12 Ω test source for CAT II. The CAT III 600 V meter clearly offers superior transient protection compared to the CAT II 1000 V meter, even though its so-called "voltage rating" could be perceived as being lower. See Table 2.

Independent testing is the key to safety compliance

How can you tell if you're getting a genuine CAT III or CAT II meter? Unfortunately it's not always that easy. It is possible for a manufacturer to self-certify that its meter is CAT II or CAT III *without any independent verification*. The IEC (International Electrotechnical Commission) develops and proposes standards, but it is not responsible for enforcing the standards. Look for the symbol and listing number of an independent testing lab such as UL, CSA, VDE, TÜV or other recognized approval agency.

That symbol can only be used if the product successfully completed testing to the agency's standard, which is based on national/international standards. UL 3111, for example, is based on EN61010-1. In an imperfect world, that is the closest you can come to ensuring that the meter you choose was actually *tested* for safety.

Table 1

Overvoltage category	In brief	Examples
CAT IV	Three-phase at utility connection, any outdoor conductors	• Refers to the "origin of installation"; i.e., where low-voltage connection is made to utility power. • Electricity meters, primary overcurrent protection equipment. • Outside and service entrance, service drop from pole to building, run between meter and panel. • Overhead line to detached building, underground line to well pump.
CAT III	Three-phase distribution, including single-phase commercial lighting	• Equipment in fixed installations, such as switchgear and polyphase motors. • Bus and feeder in industrial plants. • Feeders and short branch circuits, distribution panel devices. • Lighting systems in larger buildings. • Appliance outlets with short connections to service entrance.
CAT II	Single-phase receptable connected loads	• Appliance, portable tools, and other household and similar loads. • Outlet and long branch circuits. • Outlets at more than 10 meters (30 feet) from CAT III source. • Outlets at more than 20 meters (60 feet) from CAT IV source.
CAT I	Electronic	• Protected electronic equipment. • Equipment connected to (source) circuits in which measures are taken to limit transient overvoltages to an appropriately low level. • Any high-voltage, low-energy source derived from a high-winding resistance transformer, such as the high-voltage section of a copier.

Overvoltage installation categories. IEC 61010-1 applies to low-voltage (< 1000V) test equipment

Fluke: Where safety is built in

Safety is everyone's responsibility but ultimately it is in your hands. No tool by itself can guarantee your safety when working with electricity. It's the combination of the right tools and safe work practices that gives you maximum protection. Here are a few tips to help you in your work:

Make sure you always comply with (local) regulations.

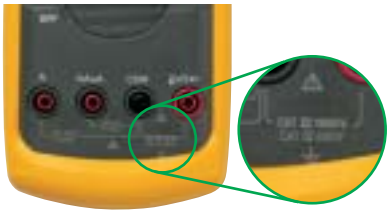
Work on de-energized circuits whenever possible.

Use proper lock-out/tag-out procedures. If these procedures are not in place or enforced, assume that the circuit is live.

Use protective gear when working on live circuits:

- Use insulated tools
- Wear safety glasses or a face shield
- Wear insulated gloves, remove watches or jewelry
- Stand on an insulated mat
- Wear flame resistant clothing, not ordinary work clothes

Use protective equipment such as safety glasses and insulated gloves



Use meters with these markings: 1000 V CAT III or 600 V CAT IV

Select the right test tool:

- Choose a test tool rated to the highest category and voltage for which it could possibly be used (most often 600 or 1000 volt CAT III and/or 600 volt CAT IV).
- Look for the category and voltage marking near the recessed input connectors of your test tool and a "double insulated" symbol on the back.
- Verify your test tool has been tested and certified by two or more independent testing laboratories, such as UL in the United States and VDE or TüV in Europe by looking for the symbols of these agencies on (the back of) your test tool.
- Make sure that the test tool is made of a high-quality, durable non-conductive material.
- Check the manual to verify that the ohms, continuity and capacitance circuits are protected to the same level as the voltage test circuit, to reduce hazards when the test tool is used incorrectly in ohms, continuity or capacitance mode (if applicable).
- Verify that the test tool has internal protection to prevent instrument damage when voltage is incorrectly applied to an amperage measurement function (if applicable).
- Make sure that the amperage and voltage of your test tool's fuses meets specifications. Fuse voltage must be as high or higher than the test tool's voltage rating.
- Be sure to use test leads that have:
  - Shrouded connectors
  - Finger guards and a non-slip surface
  - Category ratings that equal or exceed those of the test tool
  - Double insulation (look for the symbol)
  - A minimum of exposed metal on the probe tips

Inspect and test your test tool:

- Check for a broken case, worn test leads or a faded display.
- Make sure the batteries still deliver sufficient power to get reliable readings. Many test tools have a low battery indicator on the display.
- Check the test leads resistance for internal breaks while moving the leads around (good leads measure 0.1-0.3 Ohm).
- Use the meter's own test capability to ensure that the fuses are in place and working right (see manual for details).

Apply the appropriate working practices when measuring on live circuits:

- Hook on the ground clip first, then make contact with the hot lead. Remove the hot lead first, the ground lead last.
- Use the three-point test method, especially when checking to see if a circuit is dead. First test a known live circuit. Second, test the target circuit. Third, test the live circuit again. This verifies that your test tool worked properly before and after the measurement.
- Hang or rest the test tool if possible. Try to avoid holding it in your hands, to minimize personal exposure to the effects of transients.
- Use the old electrician's trick of keeping one hand in your pocket. This lessens the change of a closed circuit across your chest and through your heart.

For more information or to request the Electrical Safety DVD go to:
United Kingdom: **www.fluke.co.uk/safety**
Ireland: **www.fluke.ie/safety**
E-Europe/Middle-East/Africa: **www.fluke.nl/safety_ex**

Table 2

Overvoltage Installation Category	Working Voltage (DC or AC RMS to ground)	Peak Impulse Transient (20 repetitions)	Test Source (Ω = V/A)
CAT I	600 V	2500 V	30 Ohm source
CAT I	1000 V	4000 V	30 Ohm source
CAT II	600 V	4000 V	12 Ohm source
CAT II	1000 V	6000 V	12 Ohm source
CAT III	600 V	6000 V	2 Ohm source
CAT III	1000 V	8000 V	2 Ohm source
CAT IV	600 V	8000 V	2 Ohm source

Transient test values for overvoltage installation categories. (50 V/150 V/300 V values not included)

Troubleshooting Adjustable Speed Drives

Adjustable Speed Drives (ASDs) deliver huge benefits to industry. They save energy, enable more precise process control and help motors and equipment last longer. However ASDs also cause real difficulties for service engineers. The electrical troubleshooting of a drive can be difficult since most measurement equipment is not designed to handle the complex output signals of the drive.

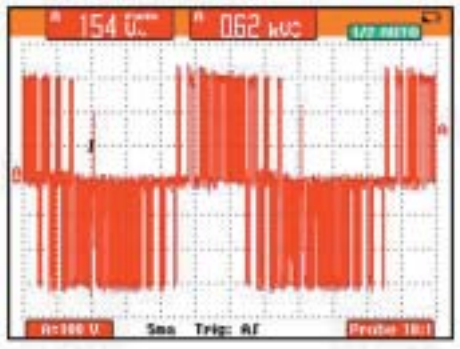


Figure 1. Motor drive output measured using the Fluke ScopeMeter 199C

Figure 2. Output voltage reading without using the low pass filter.

Figure 3. Output voltage reading with low pass filter enabled.

The Pulse Width Modulated (PWM) signal

The basic problem comes from the pulse width modulated, high output voltage of the drive (see figure 1).

Many instruments have difficulties in handling this complex signal:

- The PWM signal is difficult to measure (this has been especially true for DMMs)
- The signal generates high rf noise, making readings unstable
- Safety norms require CAT III or even CAT IV rated measurement equipment.

Fluke has several instruments that now make the troubleshooting of ASDs easy:

Fluke 87V Digital Multimeter

Many of today's true rms digital multimeters have bandwidths up to 20 kHz or more. So they respond not only to the fundamental component, which is what the motor responds to, but also to all the high frequency components generated by the PWM drive. And if the DMM isn't shielded from high frequency noise, the drive controller's high noise levels make the measurement discrepancies even more extreme.

Fluke's new 87V solves this. This new CAT IV rated meter has special shielding and a patented low pass filter that takes accurate motor measurements. The instrument helps troubleshoot the basic performance of an ASD by measuring the proper voltage and frequency on the motor terminals with the drive display, calculating the Volt-Herz product, measuring the DC Bus ripple, and more.

Fluke ScopeMeter® 190 Series

The Fluke 190 Series ScopeMeters are ideal for further analyzing problems with pulse-width-modulated variable speed drives. They feature a special Vpwm function that measures the voltage actually applied to motor whilst simultaneously measuring the frequency.

The ScopeMeter also provides Connect-and-View™ triggering which automatically displays a stable picture of the real signal.

Other Fluke tools

Many ASDs operate in an industrial environment, where large loads and load changes can result in poor power quality. Often, the performance of ASDs may be impaired by this. Fluke's range of power quality products helps to locate and prevent problems in power distribution systems to keep ASDs running smoothly.

Measuring current is very important when servicing ASDs and motors. One of the more common tools used for this is the current clamp. However, many ASDs are located in areas needing CAT IV safety rated equipment. Fluke's new i400s and i400 current clamps are the first to be CAT IV rated. The 400 A range and small overall size also make them ideal for measuring ASD and motor currents.

For more information download the Application Notes from our web site or request a copy from our local sales office.

There are three Application Notes available:

- Multimeter measurements on adjustable speed drives using the Fluke 87V Digital Multimeter.
- Measuring variable speed-motor drive output voltage with a Fluke ScopeMeter® 190 Series.
- Troubleshooting in 3-phase power networks with the Fluke 430 Series Power Quality Analyzers.

Basic electrical installation testing

Growing concern for public safety and the increasing complexity of today's fixed electrical installations in domestic, commercial and industrial premises places extra responsibility on electrical test engineers who are charged with verifying conformity to today's stringent international standards.

It is therefore important to have suitable test tools for carrying out the stringent tests imposed by the International Electrotechnical Commission (IEC) and the European Committee for Electrotechnical Standardization (CENELEC). IEC 60364, and its various associated national equivalent standards that are published throughout Europe (see table 1), specifies the requirements for fixed electrical installations in buildings. Section 6.61 of this standard describes the requirements for the verification of the compliance of the installation with IEC 60364.

The basic requirements of IEC 60364.6.61

Many electrical contractors may already be familiar with IEC 60364.6.61 or its national equivalents. It states that verification of the installation shall be carried out in the following sequence:

1. Visual inspection
2. Testing of the following:
   - continuity of protective conductors;
   - insulation resistance;
   - protection by separation of circuits;
   - floor and wall resistance;
   - automatic disconnection of supply;
     - measurements of earth electrode resistance
     - measurements of fault loop impedance
     - testing RCDs
   - polarity;
   - functional performance

To test the protective measures as described above, IEC 60364.6.61 refers to the IEC / EN 61557.

The basic requirements of IEC/EN 61557

The European Norm EN 61557 addresses the requirements for test equipment used in installation testing. It consists of general requirements for test equipment (part 1), specific requirements for combined measuring equipment (part 10) and covers the specific requirements for measuring/testing:

1. Insulation resistance (part 2)
2. Loop impedance (part 3)
3. Resistance of the earth connection (part 4)
4. Resistance to earth (part 5)
5. RCD performance in TT and TN systems (part 6)
6. Phase sequence (part 7)
7. Insulation monitoring devices for IT systems (part 8)

The Fluke 1650 Series multifunction installation testers are measuring equipment as described in part 10 of EN 61557 and the three different models in the series comply with specific parts of this norm. They are specifically designed to carry out the tests specified in IEC 60364.6.61, and all local standards/regulations derived from it, in the safest and most efficient way. They are lightweight, and feature a unique ergonomic 'curved' form that, when carried by the neck strap, makes operation in the field more comfortable.

Table 1

European equivalents of IEC 60364 (6.61)	
Austria	ÖVE/ÖNORM E8001
Belgium	A.R.E.I. / R.G.I.E.
Denmark	Stærkstrømbekendtgørelsen 6
Finland	SFS 6000
France	NF C 15-100
Germany	DIN VDE 0100
Italy	CEI 64-8
Netherlands	NEN 1010
Norway	NEK 400
Portugal	HD 384
Spain	UNE 20460
Sweden	SS 4364661 / ELSÄK-FS 1995:5
Switzerland	NIN / SN SEV 1000
UK	BS 7671 / 16th Edition IEE Wiring Regulations

For more information download the Application Note "Basic Electrical Installation Testing" from our web site or request a copy from our local sales office. (pub_ID: 10641).

A brief look at ATEX

Intrinsic safety is a protection standard employed in potentially explosive atmospheres. Devices that are certified as "intrinsically safe" are designed to be unable to release sufficient energy, by either thermal or electrical means, to cause ignition of flammable material (gas, dust/particulates).

What is "Intrinsically Safe"?

Intrinsically safe standards apply to all equipment that can create one or more of a range of defined potential explosion sources:

- Electrical sparks
- Electrical arcs
- Flames
- Hot surfaces
- Static electricity
- Electromagnetic radiation
- Chemical reactions
- Mechanical impact
- Mechanical friction
- Compression ignition
- Acoustic energy
- Ionizing radiation

What industries are intrinsically safe products designed for?

- Petro-chemical
- Oil platforms and refineries
- Pharmaceutical
- Bulk materials (e.g. grain)
- Mining
- Pipelines
- Any environment where explosive gases are present

What is ATEX?

The primary intrinsically safe standard has been set in the European Union with the 9/94/EC Directive, commonly called ATEX ("Atmosphères Explosibles," French for explosive atmospheres). The stated goal of the guidelines is to "help ensure the free movement of products in the European Union" by "minimizing the number of safeguard clause applications, at least those originating from divergent interpretations

The ATEX rules have been in place as a voluntary standard since 1 March 1996. The rules are mandatory on electrical and electronic equipment for use in environments subject to explosion hazard sold in the EU starting 1 July 2003. From this date onwards, all products sold for use in explosive atmospheres must have ATEX certification and carry the distinctive symbol: Ex

The Fluke Ex (IS) product line

Fluke is among the first manufacturers to produce handheld test tools according to the latest ATEX standards. The Fluke line of intrinsically safe tools are designed to meet the needs of instrumentation technicians maintaining and calibrating sensors and transmitters in hazardous environments such as petro-chemical plants, oil platforms, refineries and other locations subject to risk of explosion.
The difference between a standard Fluke tool and the corresponding Ex version starts with its red, impact-absorbing holster designed specifically to eliminate the potential for electrical discharge. Inside, the Fluke Ex tools have been reengineered to reduce energy avoiding generation of heat and electrical sparks.
They are premium products designed for ultimate safety.

Making sense of ATEX certification

Fluke 707Ex is ATEX-compliant and is certified Ex II 2 G EEx ia IIC T4— but what exactly does that mean?

Here a brief explanation of the ATEX certification designations.

ATEX certification 707Ex	
Ex	The ATEX examination mark. This sign is required on all devices used in European hazardous areas.
II 2 G	The classification of zones. "II" designates the tool is approved for all non-mining areas. "2" represents the category of the device, in this case the device is rated for the second most hazardous areas. "G" designates atmosphere, in this case gas, vapors and mist.
EEx	Explosion protection based on European Ex-regulations.
ia	The type of protection from explosion, in this case the energy in a device or connector has been reduced to a safe value.
IIC	Gas Group. "IIC" indicates compatibility with the most dangerous gas group.
T4	Temperature class gives the user the maximum temperature of a surface that may be in contact to the Ex atmosphere under fault conditions. T4 is rated at 135°C.

www.tti.co.uk
Tel: 01480 412451

Digital Multimeters

Safety, quality and performance: three words that sum up the benefits of our extensive range of digital multimeters. From compact first-level troubleshooters to ultra smart instruments packed with features. Designed to help you do your job faster, more efficiently and with greater accuracy, there's a model for every budget and application.

	Highest accuracy		High-end Industrial		Industrial maintenance and field service			Compact general purpose			Classic design		Heavy duty	Electrical troubleshooting			Automotive troubleshooting		Graphical meter	ProcessMeters	
Basic features	**189**	**187**	**87V**	**83V**	**179**	**177**	**175**	**112**	**111**	**110**	**77**	**73**	**27**	**16**	**12**	**7-600**	**88V**	**78**	**867B**	**789**	**787**
Counts	50000	50000	20000	6000	6000	6000	6000	6000	6000	6000	3200	3200	3200	4000	4000	4000	20000	4000	30000	30000	30000
True RMS readings	AC+DC	AC+DC	AC		AC	AC	AC	AC	AC	AC									AC+DC	AC	AC
Basic DC accuracy	0,025%	0,025%	0,05%	0,1%	0,09%	0,09%	0,15%	0,7%	0,7%	0,7%	0,3%	0,3%	0,1%	1,5%	0,9%	1,5%	0,1%	0,3%	0,025%	0,1%	0,1%
Wide bandwidth	100kHz	100kHz	20kHz	5kHz									30kHz						30 kHz		
Auto/manual ranging	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/-	●/●	●/●	●/●	●/●	●/●
Measurements																					
Voltage AC/DC	1000V	1000V	1000V	1000V	1000V	1000V	1000V	600V	600V	600V	1000V	600V	1000V	600V	600V	600V	1000V	300V	1000V	1000V	1000V
Current AC/DC	10A	10A	10A	10A	10A	10A	10A	10A	10A		10A	10A	10A	200µA			10A	10A	10A	10A	10A
Resistance	500MΩ	500MΩ	50MΩ	50MΩ	50MΩ	50MΩ	50MΩ	40MΩ	40MΩ	40MΩ	32MΩ	32MΩ	32MΩ	40MΩ	40MΩ	400Ω	50MΩ	40MΩ	30MΩ	40MΩ	40MΩ
Frequency	1MHz	1MHz	200kHz	200kHz	100kHz	100kHz	100kHz	50kHz	50kHz	50kHz							200kHz	100kHz	10MHz	200kHz	200kHz
Capacitance	50mF	50mF	10mF	10mF	10mF	10mF	10mF	10mF	10mF	10mF				10mF	10mF		10mF		10mF		
Temperature	+1350°C	+1350°C	+1090°C		+400°C									+400°C			+1090°C	+980°C			
dB	60dB	60dB																	60dB		
Conductance	500nS	500nS	60nS	60nS									32nS				60nS		3000nS		
Duty cycle/pulse width	●/●	●/●	●/-	●/-													●/●	●/-	●/●		
Continuity with beeper	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Diode test	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●
4–20mA loop current as % readout																				●	●
Motor drive measurement			●																		
RPM / Dwell																	●/-	●/ ●			
Display																					
Waveform display																			●		
Dual display	●	●																	●		
Analog bargraph	●	●	●	●	●	●	●	●	●	●	●	●	●				●	●	●		
Backlight	●	●	●	●	●	●		●									●		●	●	●
Data storage and exchange																					
Min–Max recording/with time stamp	●/●	●/●	●/-	●/-	●/-	●/-	●/-	●/-	●/-	●/-			●/-	●/●	●/●		●/-	●/-	●/ ●	●/-	●/-
Fast Min–Max	250µs	250µs	250µs														250µs		1µs		
Display Hold/Auto (Touch) Hold	●/●	●/●	●/●	●/●	●/●	●/●	●/●	●/-	●/-	●/-	-/●	-/●	-/●				●/●		-/ ●	-/ ●	-/ ●
Relative	●	●	●	●									●				●		●	●	●
RS-232 interface	●	●																	●		
Stand-alone logging	●																		●		
Readings memories	100																		3		
Other features																					
Source 4–20mA loop current/24V loop supply																				●/ ●	●/-
Automatic selection, VChek														●	●	●					
Real time clock	●	●																			
Smoothing					●	●	●												●		
Integrated holster	●	●			●	●	●				●								●		
Removable holster			●	●				●	●	●		●		●			●	●		●	●
Closed case calibration	●	●	●	●	●	●	●	●	●	●							●		●	●	●
Calibration certificate with data	●	●																			
Separate battery/fuse access	●/●	●/●	●/-	●/-	●/-	●/-	●/-	●/-	●/-	●/-			●/ ●				●/-		●/-	●/ ●	●/-
Automatic power off	●	●	●	●	●	●	●	●	●	●	●	●		●	●	●	●	●	●	●	●
Low battery indication	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Warranty and safety																					
Lifetime warranty	●	●	●	●	●	●	●				●	●	●				●	●			
Warranty (years)								3	3	3				3	3	2			3	3	3
Input alert	●	●	●	●													●				
Dangerous voltage indication	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●		
EN61010–1 CAT II											1000V	600V						300V			
EN61010–1 CAT III	1000V	1000V	1000V	1000V	1000V	1000V	1000V	600V	600V	600V	600V		1000V	600V	600V	600V	1000V		1000V	1000V	1000V
EN61010–1 CAT IV	600V	600V	600V	600V	600V	600V	600V										600V				
See catalog page	15	15	16	16	17	17	17	18	18	18	19	19	20	21	21	28	22	22	23	59	59

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DMM Selection Guide

FLUKE®

Test faster and safer with a new Fluke meter

FLUKE®

Fluke 79

Fluke 179

Move up to better performance

Move up from your old 70 Series and benefit from over 10 improvements.
The new 179 has features and diagnostic functions for faster, safer and more accurate testing. See page 17 for more details.

	Old Series (10 years ago)	New Series	Benefit
Model numbers	75, 77, 79, 21, 23	175, 177, 179	
Warranty	Expired	Lifetime	Lower cost of ownership.
Example product	**Old Fluke 79**	**New Fluke 179**	
Do your job safer: Your no 1 priority.			
Electrical safety rating (EN 61010-1)	CAT II	CAT III 1000 V CAT IV 600 V	Maximum safety against arc blasts and transients.
Unsafe Volt Alert above 30 V	No	Yes	Warns user of potentially dangerous voltages.
Test leads	Test leads with 2 mm probe tips	Sillicon test leads with 4 mm tips + protective cap	Test leads stay fixed in wall socket. Cap protects user from accidental shock.
Test leads safety rating	Not rated	CAT III 1000 V CAT IV 600 V	Safety of test leads is just as important as the meter.
Do your job faster: New features simplify day to day work.			
Min/Max/Average	No	Yes	Capture intermittent problems.
Display size	Standard	20% larger	Large, easy to read.
Display backlight	No	Yes	Usable in dim areas.
Battery door	No	Yes	Easy battery exchange without opening the complete case.
Optional magnetic hanger	No	Yes	Use ToolPak to hold meter in best position.
Do your job better: More functions, more measurement ranges, more accurate.			
True-rms	No	Yes	Accurate on non-linear signals.
Basic accuracy, dcV	0,30%	0,09%	Three times more accurate.
Max. AC voltage	750	1000	Wider measurement range.
Temperature	No	Yes	No need for a separate thermometer.

Fluke 8060A

Fluke 189

Move up from your old 8060 Series and benefit from over 15 improvements.
The new Fluke 189 has new features and functions to troubleshoot more problems with one tool, find intermittent problems and get the job done faster, easier and safer.
See page 15 for more details.

	Old Series (10 years ago)	New Series	Benefit
Model numbers	8062A, 8060A	187, 189	
Warranty	Expired	Lifetime	Lower cost of ownership.
Example product	**Old Fluke 8060A**	**New Fluke 189**	
Do your job safer: Your no 1 priority.			
Electrical safety rating (EN 61010-1)	IEC348 Class II	CAT III 1000 V CAT IV 600 V	Maximum safety against arc blasts and transients.
Unsafe Volt Alert above 30 V	No	Yes	Warns user of potentially dangerous voltages.
Test leads safety rating	Not rated	CAT III 1000 V CAT IV 600 V	Safety of test leads is just as important as the meter.
Do your job faster: New features simplify day to day work.			
Built in recorder with time stamp	No	Yes	Record and view intermittent problems and drift.
Min/Max/Average	No	Yes	Capture intermittent problems.
Peak capture	No	250 µs min/max	Find glitches and transients without a scope.
PC interface	No	Isolated IR serial port	Transfer readings to FlukeView® software.
Digital display	Standard	20% larger dual display, backlight and bargraph	Easier to read under all conditions. Display two measurements at once.
Range selection	Manual	Auto and Manual	Faster, most accurate range selected.
Optional magnetic hanger	No	Yes	Use ToolPak to hold meter in best position.
Do your job better: More functions, more measurement ranges, more accurate.			
AC + DC measurement	No	Yes	Measure composite signals.
Best resolution	10 µV	1 µV	See more detail, observe trends better.
AC voltage	750 V max.	1000 V max.	Measure higher voltages.
AC and DC current	2 A max.	10 A max.	Measure 5 times more in-line current.
Temperature	No	Yes	No need for a separate thermometer.
Capacitance	No	Yes	Measure motor capacitors and components.
Duty cycle, pulse width	No	Yes	Troubleshoot control circuits.
Frequency range	200 kHz (700 kHz)	1 MHz	Measure high frequency signals.

Fluke Combo Kits

Buy a Combo Kit and save

New

87V/E Industrial Electrician Combo Kit

- Fluke 87V True RMS Multimeter
- TL224 SureGrip™ Silicone Test Lead Set
- TP238 SureGrip™ Slim Reach Test Probe Set (insulated tips with 4 mm of exposed metal)
- AC 220 SureGrip™ Alligator Clip Set
- Magnetic Hanger
- 80BK Temperature Probe
- C800 Hard Case

Electronics Combo Kit

- Fluke 179 True RMS Multimeter
- TL224 SureGrip™ Silicone Test Lead Set
- TL910 Electronic Test Probe Set
- AC280 SureGrip™ Hook Clip Set
- 80BK Integrated DMM Temperature Probe
- C800 Hard Meter and Accessory Case

Industrial Combo Kit

- Fluke 179 True RMS Multimeter
- TL224 SureGrip™ Silicone Test Lead Set
- AC220 SureGrip™ Alligator Clip Set
- TP4 Slim Reach Test Probe Set (4 mm)
- 80BK Integrated DMM Temperature Probe
- C800 Hard Meter and Accessory Case
- + Maglite flashlight

Electrician's Combo Kit

- Fluke 112 True RMS Multimeter
- Fluke 322 Clamp Meter
- TL76 All-in-one Test Lead Set
- C800 Hard Meter and Accessory Case

Multimeter and Infrared Thermometer Combo Kit

- Fluke 179 True RMS Multimeter
- Fluke 61 Infrared Thermometer
- C800 Hard Meter and Accessory Case

189/FlukeView Combo Kit

- Fluke 189 True RMS Multimeter
- FVF-SC2 FlukeView Forms Software

Ordering Information

Fluke 87V/E	Industrial Electrician Combo Kit
Fluke 179/MAG Kit	Industrial Combo Kit
Fluke 179/EDA Kit	Electronics Combo Kit
Fluke 112/322 Kit	Electrician's Combo Kit
Fluke 179/61 Kit	Multimeter and Infrared Thermometer Combo Kit
Fluke 189/FVF	189/FlukeView Combo Kit

180 Series Digital Multimeters

FLUKE®

Fluke 189

Fluke 187

Lifetime Warranty!

CAT III 1000V
CAT IV 600V

On all inputs

LISTED UL CSA TÜV PRODUCT SERVICE GS DVE True RMS

Solve complex problems with advanced measurement functions, accuracy and data logging

The Fluke 189 and 187 are the most advanced meters with the features, precision and accuracy to troubleshoot power distribution, industrial automation, process controls and electronic and electro-mechanical equipment in the field or on the bench. Model 189 has a built-in data logger to record measurements unattended without a PC. Recorded data can be viewed on the 189 or transferred to a PC with optional FlukeView® Forms software.

Features

	187	189
True-RMS measurements	AC, AC+DC	AC, AC+DC
Bandwidth (voltage/current)	100kHz / 100kHz	100kHz / 100kHz
Digital display counts (default/selectable)	50000 / 5000	50000 / 5000
Multiple display with large digits and backlight, updates 4 times per second	●	●
Analog bargraph segments, updates 40 times per second	51-segments	51-segments
Min-Max-Average recording with relative time stamp	●	●
Fast Min-Max recording	250µsec	250µsec
AutoHOLD® and Relative modes for reference and offset measurements	●	●
Temperature readings using optional K-type thermocouple and adapter	●	●
Audible continuity and diode test	●	●
Duty cycle and pulse width measurements	●	●
PC interface for data exchange and closed case calibration	●	●
Memory for storing up to 3 days of continues stand-alone logging		●
Readings memory (memory locations)		100
Easy battery and fuse exchange without opening the complete case	●	●
Ergonomic case with integrated protective holster	●	●

Specifications

(Check the Fluke web for detailed specifications)

Functions	Maximum	Max. resolution	187 and 189**
Voltage DC	1000V	1µV	±(0.025%+5)
Voltage AC	1000V	1µV	±(0.4%+40)
Current DC	10A	0.01µA	±(0.15%+2)
Current AC	10A	0.01µA	±(0.75%+5)
Resistance	500MΩ	0.01Ω	±(0.05%+2)
Conductance	500nS	0.01nS	±(1.0%+10)
Capacitance	50000µF	0.001nF	±(1.0%+5)
Frequency	1MHz	0.01Hz	±(0.005%+1)
Temperature	-200°C/+1350°C	0.1°C	±(1%+1°C)
dBm and dBV	-52/+60dB	0.01dB	± 0.1 dB

Accuracies are best accuracies for each function.
** 187 and 189 accuracy and resolution are stated for 50.000 counts.

Battery Life: 72 hours typical (alkaline)
Size (HxWxD): 203 mm x 100 mm x 50 mm
Weight: 0.545 kg
Lifetime Warranty

Included Accessories

TL71 silicone test leads, probe holder, two AC72 alligator clips, 4 AA batteries (installed), user manual, calibration certificate with measurement data.

Ordering Information

Fluke 187	True RMS Multimeter
Fluke 189	True RMS Multimeter
Fluke 189/FVF	FlukeView Combo Kit
	See page 14
FVF-SC2	FlukeView Forms software including interface cable

Recommended Accessories

C125
See page 70

TL910
See page 64

TL81A
See page 64

FVF-SC2
See page 72

TPAK
See page 72

80 Series V Digital Multimeters

FLUKE®

New

Fluke 83V

Fluke 87V

Performance and accuracy for maximum industrial productivity

The new Fluke 80 Series V has improved measurement functions, troubleshooting features, resolution and accuracy to solve more problems on motor drives, in plant automation, power distribution, and electro-mechanical equipment.

The new Fluke 87V has a unique function for accurate voltage and frequency measurements on adjustable speed motor drives and other electrically noisy equipment. A built-in thermometer conveniently allows you to take temperature readings without having to carry a separate instrument.

Features

	83V	87V
True-RMS voltage and current for accurate measurements on non linear signals		●
Bandwidth (voltage/current)	5 kHz	20 kHz
Digital display counts (default/selectable)	6000	20000 / 6000
Selectable filter for accurate voltage and frequency measurements on motor drives		●
Large display with analog bargraph and 2 level bright white backlight	●	●
Auto and manual ranging for maximum flexibility	●	●
Built-in thermometer lets you carry one less tool		●
Peak capture to record transients as fast as 250 µs		●
Relative mode to remove test lead resistance from low ohms measurements	●	●
Min-Max-Average recording with Min/Max Alert to capture variations automatically	●	●
AutoHOLD® to capture stable readings avoiding noisy signals	●	●
Audible continuity, diode test and duty cycle	●	●
Input Alert	●	●
"Classic" design with new removable holster with built in test lead and probe storage	●	●
Improved selectable sleep mode for long battery life	●	●
Easy battery and fuse exchange without opening the complete case	●	●

Lifetime Warranty!

CAT III 1000V
CAT IV 600V

On all inputs

LISTED UL · SA · TÜV PRODUCT SERVICE GS · VDE · True RMS

Specifications

(Check the Fluke web for detailed specifications)

Functions	Maximum Range	83V		87V*	
		Max. resolution	Accuracy	Max. resolution	Accuracy
Voltage DC	1000 V	0.1 mV	±(0.1+1%)	10 µV	±(0.05%+1)
Voltage AC	1000 V	0.1 mV	±(0.5%+2)	10 µV	±(0.7%+2)
Current DC	10 A **	0.1 µA	±(0.4%+2)	0.01 µA	±(0.2%+2)
Current AC	10 A **	0.1 µA	±(1.2%+2)	0.01 µA	±(1.0%+2)
Resistance	50 MΩ	0.1 Ω	±(0.4%+1)	0.01 Ω	±(0.2%+1)
Conductance	60 nS	0.01 nS	±(1.0%+10)	0.001 nS	±(1.0%+10)
Capacitance	9999 µF	0.01 nF	±(1.0%+2)	0.01 nF	±(1.0%+2)
Frequency	> 200 kHz	0.01 Hz	±(0.005%+1)	0.01 Hz	±(0.005%+1)
Temperature	-200 to 1090 °C	-		0.1 °C	1.0%
80BK temperature probe	- 40 to 260 °C	-		-	2.2 °C or 2%

Accuracies are best accuracies for each function.
* 87V accuracy is stated for 6.000 counts and resolution for 20.000 counts
** 20 A up to 30 seconds

Battery Life: Over 400 hours typical (alkaline).
Size (HxWxD):
200 mm x 95 mm x 48 mm

Weight: 0.6 kg
Lifetime Warranty

Included Accessories

TL75 test leads, AC72 alligator clips, yellow holster (H80M excl. TPAK), 80BK temperature probe (87V only), 9 V battery (installed), CD-ROM (user's manual and technical notes) and operator's guide.

Ordering Information

Fluke 83V	Multimeter
Fluke 87V	True RMS Multimeter
Fluke 87V/E	Industrial Electrician Combo Kit

See page 14

Recommended Accessories

C90
See page 70

TL238
See page 62

i410/i1010
See page 67

TPAK
See page 72

L215
See page 72

170 Series Digital Multimeters

FLUKE®

Fluke 179

Fluke 177

Fluke 175

Lifetime Warranty!

CAT III 1000V
CAT IV 600V

On all inputs

LISTED UL · CSA · TÜV PRODUCT SERVICE · GS · DVE · True RMS

Versatile meters for field service or bench repair

These meters have the features needed to find most electrical, electro-mechanical and heating and ventilation problems. They are simple to use and have significant improvements over Fluke's original 70 Series like, True-RMS, more measurement functions, conformance to the latest safety standards, and a much larger display that's easier to view.

Features

	175	177	179
True-RMS measurements	AC	AC	AC
Digital display counts, updates 4 times per second	6000	6000	6000
Display backlight		●	●
Analog bargraph / segments, updates 40 times per second	33-segments	33-segments	33-segments
Auto and Manual ranging	●	●	●
Display Hold and AutoHOLD®	●	●	●
Min-Max-Average recording mode with Min/Max Alert	●	●	●
Temperature readings (bead thermocouple probe included)			●
Smoothing mode allows filtering of rapidly changing inputs	●	●	●
Audible continuity and diode test	●	●	●
Test lead alert	●	●	●
Unsafe voltage alert warns for voltages above 30V	●	●	●
Low battery indication	●	●	●
Ergonomic case with integrated holster	●	●	●
Easy battery exchange without opening the complete case	●	●	●
Selectable sleep mode preserves battery life	●	●	●

Specifications

(Check the Fluke web for detailed specifications)

Functions	Maximum	Max. resolution	175	177	179
Voltage DC	1000V	0.1mV	±(0.15%+2)	±(0.09%+2)	±(0.09%+2)
Voltage AC	1000V	0.1mV	±(1.0%+3)	±(1.0%+3)	±(1.0%+3)
Current DC	10A	0.01mA	±(1.0%+3)	±(1.0%+3)	±(1.0%+3)
Current AC	10A	0.01mA	±(1.5%+3)	±(1.5%+3)	±(1.5%+3)
Resistance	50MΩ	0.1Ω	±(0.9%+1)	±(0.9%+1)	±(0.9%+1)
Capacitance	10000µF	1nF	±(1.2%+2)	±(1.2%+2)	±(1.2%+2)
Frequency	100kHz	0.01Hz	±(0.1%+1)	±(0.1%+1)	±(0.1%+1)
Temperature	-40°C/+400°C	0.1°C			±(1.0%+10)

Accuracies are best accuracies for each function

Battery Life: Alkaline, 200 hrs typical
Size (HxWxD): 190 mm x 85 mm x 45 mm
Weight: 0.42 kg
Lifetime Warranty

Recommended Accessories

C90
See page 70

TLK-220
See page 62

TL76
See page 62

i410-i1010
See page 67

Included Accessories

Test leads with 4 mm lantern tips and protective cap, installed 9V battery and users manual. The 179 also includes the 80BK temperature probe.

Ordering Information

Fluke 175	True RMS Multimeter
Fluke 177	True RMS Multimeter
Fluke 179	True RMS Multimeter
Fluke 179/EDA Kit	Electronics Combo Kit
Fluke 179/MAG Kit	Industrial Combo Kit
Fluke 179/61 Kit	Multimeter and IR Thermometer Kit

See page 14

110 Series Digital Multimeters

FLUKE®

Fluke 112

Fluke 111

Fluke 110

600V CAT III

On all inputs

LISTED UL CSA TÜV PRODUCT SERVICE GS VDE True RMS

Compact general purpose meters

The 110 series True-RMS meters have all the basic measurement features and functions needed for every day tasks. Their simplicity, compact design, and price make them perfect for quick verifications for field service and contractor use.

Features

	110	111	112
True-RMS measurements	AC	AC	AC
Digital display counts, updates 4 times per second	6000	6000	6000
Display backlight			●
Analog bargraph / segments, updates 40 times per second	33-segments	33-segments	33-segments
Auto and Manual ranging	●	●	●
Display Hold	●	●	●
Min-Max-Average recording mode with Min/Max Alert	●	●	●
Audible continuity and diode test	●	●	●
Test lead alert	●	●	●
Unsafe voltage alert warns for voltages above 30V	●	●	●
Low battery indication	●	●	●
Compact case with removable holster	●	●	●
Easy battery exchange without opening the complete case	●	●	●
Selectable sleep mode preserves battery life	●	●	●

Specifications

(Check the Fluke web for detailed specifications)

Functions	Maximum	Max. resolution	110	111	112
Voltage DC	600V	1mV	±(0.7%+2)	±(0.7%+2)	±(0.7%+2)
Voltage AC	600V	1mV	±(1.0%+3)	±(1.0%+3)	±(1.0%+3)
Current DC	10A	1mA		±(1.0%+3)	±(1.0%+3)
Current AC	10A	0.01A		±(1.5%+3)	±(1.5%+3)
Resistance	40MΩ	0.1Ω	±(0.9%+1)	±(0.9%+1)	±(0.9%+1)
Capacitance	10000µF	1nF	±(1.9%+2)	±(1.9%+2)	±(1.9%+2)
Frequency	50kHz	0.01Hz	±(0.1%+2)	±(0.1%+2)	±(0.1%+2)

Accuracies are best accuracies for each function

Battery Life: Alkaline, 300 hrs typical
Size (HxWxD): 160 mm x 96 mm x 46 mm
Weight: 0.35 kg
Three Year Warranty

Included Accessories

Test leads with 4 mm lantern tips and protective cap, C10 holster, installed 9V battery and users manual.

Ordering Information

Fluke 110	True RMS Multimeter
Fluke 111	True RMS Multimeter
Fluke 112	True RMS Multimeter
Fluke 112/322	Electricians Combo Kit
	See page 14

Recommended Accessories

C50
See page 70

TL223
See page 62

TL76
See page 62

MC6
See page 71

TPAK
See page 72

73/77 Digital Multimeters

FLUKE®

Fluke 77 III

Fluke 73 III

All-round performers for basic measurement tasks

The model numbers Fluke 73 and 77 are an important part of Fluke's reputation. In many years of service they have become the preferred models for a large number of professionals. The Fluke 73 and 77 offer exactly the right fit for a wide range of measurements. They are truly all-round performers.

The 73 III is perfectly suited for many electronic applications and has the "classic" 70 series design with removable holster. The 77 III has all the features and functions for a wide range of industrial applications packaged in an ergonomic case with integrated holster.

Features

	73 III	77 III
Digital display counts	3200	3200
High contrast digital display with large digits		●
Analog bargraph/segments	31	31
Auto and Manual ranging	●	●
Automatic Touch Hold®	●	●
Audible continuity / diode test	●	●
Ergonomic case with integrated holster		●
"Classic" design with removable holster	●	
Sleep Mode preserves battery life	●	●
EN 61010-1 safety rating	CAT II 600V	CAT III 600V CAT II 1000V

Lifetime Warranty!

600V CAT III

On all inputs (Fluke 77 III)

LISTED UL CSA TÜV PRODUCT SERVICE GS

Specifications

Function	Maximum	Max. resolution	73 III	77 III
Voltage DC	600V 1000V	0.1mV 0.1mV	±(0.3% + 1)	±(0.3% + 1)
Voltage AC	600V 1000V	1mV 1mV	±(2.0% + 2)	±(2.0% + 2)
Current DC	10A	0.01mA	±(1.5% + 2)	±(1.5% + 2)
Current AC	10A	0.01mA	±(2.5% + 2)	±(2.5% + 2)
Resistance	32MΩ	0.1Ω	±(0.5% + 1)	±(0.5% + 1)

Accuracies are best accuracies for each function.

Battery Life: 2000 hours typical
Size (HxWxD): 73 III 188 mm x 85 mm x 48 mm
77 III 190 mm x 89 mm x 45 mm
Weight: 73 III 0.45 kg
77 III 0.42 kg
Lifetime Warranty

Included Accessories

73 III: TL75 test leads, operator's manual, 9V battery (installed) and C70Y holster
77 III: TL75 test leads, operator's manual, 9V battery (installed)

Ordering Information

Fluke 73 III Multimeter
Fluke 77 III Multimeter

Recommended Accessories

C50
See page 70

TLK220
See page 62

TL76
See page 62

i400
See page 67

80TK
See page 68

27 Sealed Digital Multimeter

FLUKE®

Fluke 27

Lifetime Warranty!

1000V CAT III

On all inputs

LISTED

Completely sealed to prevent entry of water and contaminants

A special extra ruggedized case with o-rings prevents water from entering the input jacks and switches. Use this meter in very harsh, wet or dusty locations. Meets MIL STD 28800 military specifications for vibration, shock, and water resistance.

Features

	27
Digital Display/Counts	3200
Analog Bar Graph/Segments	31
Fast Auto and Manual Ranging	●
Touch Hold®	●
Rugged, O-Ring Sealed Case	●
Separate, Sealed Battery/Fuse Door	●
Operates from -15°C to +55° and 95% Relative Humidity	●
Meets Military Shock, Vibration and Water Resistance Requirements	●
Min/Max Relative Mode	●
Audible Continuity/Diode Test	●
Superior EMI Shielding	●

Specifications

Function	Range & Resolution	Best Accuracy
Voltage DC	320.0mV, 3.200V, 32.00V, 320.0V, 1000V	±(0.1% +1)
Voltage AC	320.0mV, 3.200V, 32.00V, 320.0V, 1000V	±(0.5% +3)
Current DC	320.0µA, 3.200 mA, 32.00 mA, 320.0 mA, 10A	±(0.75% +2)
Current AC	320.0µA, 3.200 mA, 32.00 mA, 320.0 mA, 10A	±(1.5% +2)
Resistance	320Ω, 3.200kΩ, 32.00kΩ, 320.0kΩ, 3.200MΩ, 32.00MΩ	±(0.2% +1)
Conductance	32.00ns	±(2% +10)

Range & Resolution: If selected range is 3.200V the resolution is 0.001V in that range
Battery Life: Typically over 1000 hours (alkaline)
Size (HxWxD): 203 mm x 95 mm x 56 mm
Weight: 0.75 kg
Lifetime Warranty

Included Accessories

TL75 right-angle test leads, two insulated AC72 alligator clips, spare fuse, 9 Volt battery and operator's manual.

Ordering Information

Fluke 27 Multimeter

Recommended Accessories

C25
See page 70

C550
See page 70

TL220
See page 62

AC285
See page 63

i200
See page 66

12/16 Digital Multimeters

Fluke 16

On all inputs

Fluke 12

Basic digital meters with automatic AC/DC sensing

The Fluke 12 and 16 are ideal for first-level troubleshooting. The VChek™ function provides the user with ultimate ease of use by automatic switching to AC voltage, DC voltage or resistance measurements depending on the input. The Fluke 16 has extra capabilities for measuring temperature, current for flame sensor measurements, capacitance, plus recording of minimum and maximum values over time with a relative time stamp.

Features

	12	16
Digital display counts	4000	4000
Auto and Manual ranging	●	●
VChek™ automatic measurement selection	●	●
Audible continuity/diode test	●	●
Continuity Capture locates 250µs intermittent opens	●	●
Min/Max recording over time with relative time stamp	●	●
Rotary measurement selection switch		●
Removable holster		●
Sleep Mode preserves battery life	●	●
Temperature		●
Microamps		●

Specifications

Functions	Maximum	Max. resolution	12	16
Voltage DC	600V	1mV	±(0.9%+1	±(0.9%+1)
Voltage AC	600V	1mV	±(1.9%+3)	±(1.9%+3)
Current DC	200µA	0.1µA		±(1%+2)
Current AC	200µA	0.1µA		±(2%+3)
Resistance	40MΩ	0.1Ω	±(0.9%+1)	±(0.9%+1)
Capacitance	10000µF	0.001µF	±(1.9%+2)	±(1.9%+2)
Temperature	-40/+400°C	0.1°C		±(1%+0.8°C)

Accuracies are best accuracies

Battery Life: Alkaline, 650 hours continuous
Carbon-zinc, 450 hours continuous
Size (HxWxD):
12: 144 mm x 69 mm x 39 mm
16: 159 mm x 77 mm x 48 mm

Weight: 12: 0.29 kg
16: 0.44 kg
Three Year Warranty

Included Accessories

TL75 test leads, 9V battery (installed) and operator's manual. In addition the Fluke 16 includes the 80BK temperature accessory, and C10 Holster.

Ordering Information

Fluke 12 Multimeter
Fluke 16 Multimeter

Recommended Accessories

C12A
See page 70

i200s
See page 66

80AK
See page 68

80PK-26
See page 68

MC6
See page 71

78 and 88V Automotive Meters

Fluke 78

Fluke 88V/A

The right meters for auto-electric diagnosis

Perhaps the most important tool you'll use in troubleshooting auto electrical systems is the multimeter. Basic multimeters measure voltage, current and resistance, while automotive multimeters like the Fluke 78 or Fluke 88V have features that can check frequency, duty cycle, make diode tests, and measure temperature, pressure and vacuum.

Features

	78	88V/A
Continuity for detecting open and shorts	●	●
Frequency for "pulsed-DC" and AC tests	●	●
Duty cycle to verify operation of feedback carburetors	●	●
Diode test for alternator testing	●	●
Built-in thermometer; thermocouple probe included	●	●
Min/Max Recording	●	
Min/Max/Average recording with Min/Max Alert		●
Peak capture to record transients as fast as 250 µs		●
Relative mode to remove test lead resistance from low ohms measurements		●
Millisecond pulse width measurements for fuel injectors		●
AutoHOLD® to capture stable readings		●
Large display with bright, two-level backlight		●
Magnet hanger to attach meter to the vehicle		●
RPM80 Inductive Pickup for both conventional and distributorless (DIS) ignitions	optional	●
Hard Meter Case		●
Safety rating	CAT II 300 V	CAT III 1000V, CAT IV 600 V

Lifetime Warranty!

CAT III 1000V
CAT IV 600V

On all inputs
Fluke 88V

LISTED

Specifications

	Fluke 78			Fluke 88V		
	Range	Resolution	Accuracy	Range	Resolution	Accuracy
Voltage DC	300V	0.1mV	0.3%	1000V	0.1mV	0.1%
Voltage AC	300V	1mV	2.5%	1000V (5 kHz)	0.1mV	0.5%
Current DC	10A	1mA	1%	10A	0.1µA	0.4%
Current AC	10A	10mA	2%	10A	0.1µA	1.2%
Resistance	40MΩ	0.1Ω	0.5%	40Ω	0.1Ω	0.4%
Capacitance				10mF	0.01nF	1%
Frequency	100kHz	0.01Hz	0.1%	200kHz	0.01Hz	0.005%
Temperature	1000°C	1°C	1%	1090°C	0.1°C	1%

Battery Life: 88V – Over 400 hours typical (alkaline)
78 – 2000 hours typical

Size (HxWxD): 88V – 186 mm x 86 mm x 32 mm
78 – 166 mm x 75 mm x 28 mm

Weight: 88V – 0.36 kg; 78 – 0.34 kg
Lifetime Warranty

Included Accessories

Fluke 88V/A: H80M Holster with TPAK Meter Hanging Solution, TL224 SureGrip Silicone Test Lead Set, TP220 SureGrip Test Probe Set, AC285 SureGrip Large Jaw Alligator Clip Set, 80BK Integrated Temperature Probe, RPM80 Inductive Pick-up Probe, C800 Hard Case, User's Manual + Quick Reference Guide
Fluke 78: C70Y Holster, TL75 Test Lead Set, AC72 Alligator Clip Set, 80BK Integrated Temperature Probe, User's Manual + Quick Reference Guide

Ordering Information

Fluke 88V/A Automotive Meter Combo Kit
Fluke 78 Automotive Meter

Recommended Accessories

TLK-282
See page 65

90i-610s
See page 65

80PK-27 (requires 80AK)
See page 68

PV350
See page 65

867B Graphical Multimeter

FLUKE®

Fluke 867B

1000V CAT III
On all inputs

LISTED UL · CSA · TÜV PRODUCT SERVICE GS · True RMS

High performance multimeter with advanced graphics and reporting capabilities

The Graphical™ Multimeter combines the industry's most advanced multimeter capabilities with the visual power of trend graphing and waveform display, component testing, and logic checking together in one easy-to-use, handheld instrument.
The Fluke 867B features:

- 0.025% dc accuracy for critical measurements
- Big, bold GMM display, shows multiple numeric readings and waveforms simultaneously.
- Optically isolated, RS-232 interface for printing and transferring measurement data, FlukeView™ 860 software provides a communication link with PC's, for documentation, analysis and storage.
- TrendGraph™ works like an electronic chart recorder, plotting high resolution meter readings for up to 30 hours, in intervals from 1 second to 15 minutes
- Component test for checking component signatures on resistors, capacitors, semiconductors and more

Features

	867B
Digital Display/Counts	30 000
True-RMS Measurements	●
High Impedance Input	●
Resistance/Conductance/Capacitance/Continuity	●
Min/Max/Avg with Time Stamp	●
Relative Mode	●
dB	●
Logic Activity	●
Component Test	●
Bright Backlight	●
Rechargeable Batteries/Line Adapter	●
Waveform memory	●

Specifications

Function	Range & Resolution	Best Accuracy 867B
Voltage DC	300.00mV, 3.000V, 30.000V, 300.00V, 1000.0V	±(0.025% + 2)
Voltage AC	300.00mV, 3.000V, 30.000V, 300.00V, 1000.0V	±(0.5%+4)
Current DC	300.00µA, 3000.0µA	±(0.1%+2)
	30.000mA, 300.00mA, 3.000A, 10.000A	±(0.05%+15
Current AC	300.00µA, 3000.0 µA	±(0.75%+10)
	30.000mA, 300.00mA, 3.000A, 10.000A	±(0.75%+10)
Resistance	300.00Ω, 3.0000kΩ, 30.000kΩ, 300.00kΩ, 3.0000MΩ, 30.000MΩ	±(0.7%+2)
Capacitance	10000pF, .1000µF, 1.000µF, 10.00µF, 100.0µF, 1000µF, 10000µF	±(1.9%+2)
dB/dBm	2 - 1200 Ohm References	±0.5dB
Frequency	1000.00Hz, 10.0000kHz, 100.000kHz, 1.00000MHz, 2.0000MHz	±(0.05%+1)
	10.0000MHz	±(0,05% + 1)
Meter VAC bandwidth	300kHz	

Range & Resolution: If selected range is 3.000V the resolution is 0.001V in that range
Size (HxWxD): 246.4 mm x 137.2 mm x 69.9 mm
Weight: Without batteries: 1.1 kg. With battery pack: 1.4 kg
Three Year Warranty

Included Accessories

TL71 test leads and users manual.
BP7217 Battery Pack and BE860 Battery Eliminator.

Ordering Information

Fluke 867B Graphical Multimeter
SC860 FlukeView 860 Software and optically-isolated RS-232 cable (PM9080)

Recommended Accessories

C789
See page 70

TL81A
See page 64

TL910
See page 64

i410/i1010
See page 67

SC860

45 Dual Display Bench Multimeter

FLUKE®

Fluke 45

Maximum versatility in a single instrument

The Fluke 45 is a feature-rich 5-digit, 100 000 count meter that truly fits all applications and virtually any measurement need - on the workbench or in the field. Two multifunction displays and 16 different measurement capabilities allow wide ranging versatility.
The Fluke 45 delivers high performance and flexibility for manufacturing test, depot and field service, as well as R&D applications.

Use optional FlukeView® Forms software to communicate through the Fluke 45's standard serial port.

Features

	45
Multifunction Vacuum Fluorescent Dual Display	●
True-RMS Voltage and Current Measurement, Including AC + DC	●
0.05% DC Current Accuracy for 4-20 mA Current Loop Service	●
Standard RS-232 Interface	●
Optional IEEE-488.2 Interface	●
Frequency Measurement to 1 MHz	●
dB Measurements	●
Min/Max Mode	●
Relative Mode	●
Compare (Hi/Lo/Pass) for Quick In-Tolerance Tests	●
Closed Case Calibration	●
Optional: Rack-Mount Kit	●
Touch Hold®	●
Diode Test/Continuity	●

Specifications

Display: 3000 Counts, 30 000 Counts, 100 000 Counts
Reading Rates: Fast (20 times per second), Medium (5 times per second), Slow (2.5 times per second)

Function	Range	Best Accuracy (medium reading rate)	Resolution
Voltage DC	300mV-1000V	±0.025% + 2	1 µV-0.01V
Voltage AC (True-RMS, AC Coupled) Freq. 20 Hz-100 kHz	300mV-750V	±0.2% + 10	1 µV-0.01V
dB Readout (600 Ω Ref.) (Ref. Z 2Ω -8000Ω)	-34-+60	±0.08 dBm	0.01 dB-0.1 dB
Current DC	30 mA-10A	±0.05% + 2	0.1 µA-10 mA
Current AC (True-RMS, AC Coupled) Freq. 20 Hz-20 kHz	10 mA-10A	±0.5% + 10	0.1 µA-10 mA
Resistance	300Ω-100 MΩ	±0.05% + 2	0.001Ω-1 MΩ
Frequency	5 Hz->1 MHz	±0.05% + 1	0.01 Hz-1 kHz

Range & Resolution: If selected range is 100.000mV the resolution is 0.001mV in that range
Size (H x W x D): 216 mm x 93 mm x 286 mm
Weight: Net 2.4 kg; with battery 3.2 kg
One Year Warranty

LISTED UL CSA True RMS

Included Accessories
Line cord, TL 71 test leads, operator's manual, and Quick Reference Guide.

Options
Field/customer installable: Fluke 45-01K Rechargeable Lead-Acid Battery Kit
Fluke 45-05K IEEE-488.2 Interface Kit

Optional Accessories

M00-200-634	Rack Mount Kit
RS40	6' RS-232 Terminal Cable
RS41	6' RS-232 Modem Cable

Ordering Information

Fluke 45	Dual Display Multimeter
Fluke 45-01	with Factory-Installed Battery
Fluke 45-05	with Factory-Installed IEEE-488.2 Interface
Fluke 45-15	with Factory-Installed Battery and IEEE-488.2 Interface
FVF-SC3	FlukeView Forms software including interface cable

Recommended Accessories

TL81A
See page 64

TL910
See page 64

TL40
See page 64

TLK-225
See page 62

FVF-SC3
See page 72

www.tti.co.uk
Tel: 01480 412451

Electrical Testers and Clamp Meters

Fluke's wide range of electrical testers and clamp meters bring you operational simplicity without sacrificing versatility. Ideal for making quick measurements in tight spaces, our electrical testers offer many innovative features including automatic range selection, and are designed for convenient one-handed operation. For non-contact current measurement our handy clamp meters feature wide-opening jaws that make them safer and faster to use.

T3/T5 Electrical Testers

Fluke T3

Fluke T5-1000

The fast and easy solution to basic electrical testing

Fluke T3 Voltage and Continuity Tester

The Fluke T3 voltage and continuity tester is easy to use and is built to last. There are no settings – just probe the circuit and the T3 will show whether you are looking at AC voltage, DC voltage or an open circuit. Touch the test probes together and it automatically switches on. The Auto-on light indicates that the instrument is working correctly and will automatically turn off after approximately 8 minutes of inactivity.
Seven LED voltage indicators differentiate between key voltage levels.

Fluke T5-600 and T5-1000 Voltage, Continuity and Current Testers

The Fluke T5 testers let you check voltage, continuity and current with one compact tool. Select volts, ohms or current and the instrument does the rest. Model T5-600 measures 600 volts AC/DC, model T5-1000 is designed for 1000 volts. OpenJaw™ current technology lets you check current up to 100 A, without breaking the circuit. The optional H5 holster keeps the test probes and leads ready to test and lets you clip the T5 onto your belt.

Features

	T3	T5-600	T5-1000
Display	LED	LCD	LCD
Automatic Selection	●	●	●
Continuity Beeper	●	●	●
DC polarity indicator	●	●	●
Auto off	●	●	●

Specifications

	T3	T5-600	T5-1000
Voltage AC	690 V*	600 V	1000 V
Voltage DC	220 V*	600 V	1000 V
Current AC		100 A	100 A
Continuity	< 20 Ω	< 25 Ω	< 25 Ω
Resistance		1000 Ω	1000 Ω
Safety rating	1000 V CAT III	600 V CAT III	1000 V CAT III

* Voltage levels will vary depending on country of intended use.

T3
Battery life: 350 hours
Size (HxWxD):
160 mm x 45.7 mm x 33 mm
Weight: 0.2 kg
One year warranty

T5-600/T5-1000
Battery life: 400 hours
Size (HxWxD):
203 mm x 51 mm x 30.5 mm
Weight: 0.38 kg
Two year warranty

Included Accessories

T3: 4 mm probes and instruction sheet
T5-600 and T5-1000:
TP4 4 mm detachable probes (detachable GS38 probes for the UK) and instruction sheet

Ordering Information

Fluke T3	Electrical Tester
Fluke T3-1AC Kit	Electrical Tester Kit with 1AC
Fluke T5-600	Electrical Tester
Fluke T5-1000	Electrical Tester
Fluke T5-H5-1AC Kit	Electrical Tester Kit with Holster and 1AC

Buy Electrical Tester Kits and Save

T5-H5-1AC Kit
- T5-1000 Electrical Tester
- H5 Holster
- 1AC VoltAlert for free

T3-1AC Kit
- T3 Electrical Tester
- 1AC VoltAlert
- Save 15%

Recommended Accessories

H5 (T3 and T5)
See page 71

ACC-T5-Kit (T5)
See page 62

AC285 (T5)
See page 63

TP38 (T5)
See page 63

L210 (T5)
See page 72

T100 Series
Voltage and Continuity Testers

FLUKE®

The fast and easy solution to voltage, continuity and resistance measurements

Ideal for site conditions, the 3 models of the T100 Series 2-pole testers have a rugged construction and ergonomically formed housing for perfect handling. All models offer a patented three-phase rotation detection system providing quick phase rotation indication.

Moreover they have a special electrical torch function for working in low light level environments and have an ingress protection rating of IP65. The T100 Series are compliant with EN 61010-1 and EN61243-3 requirements.

Features

	T100	T120	T140
Display	12 LED's	3½ digit LCD	3½ digit LCD
Bargraph		●	●
Backlight			●
Resistance measurement			●
Voltage test	●	●	●
Optical and acoustical continuity test	●	●	●
Rotary field indication	●	●	●
Single pole test for phase detection	●	●	●
Indication of polarity	●	●	●
Electrical torch function	●	●	●

Specifications

	T100	T120	T140
Voltage AC/DC	12 – 690V	12 – 690V	12 – 690V
Continuity	0 – 400 kΩ	0 – 400 kΩ	0 – 400 kΩ
Frequency	0 – 400 Hz	0 – 400 Hz	0 – 400 Hz
Phase Rotation	100 to 690V	100 to 690V	100 to 690V
Resistance measurement	-	-	Up to 1999Ω
Response time	< 0.1s	< 0.1s	< 0.1s

Size (HxWxD): 240 mm x 56 mm x 24 mm
Case: IP65 (water-jet and dust tight protection)

Weight: 180 g
Two year warranty

Not available in all countries

Included Accessories
Two 1.5V batteries and instruction sheet

Ordering Information
Fluke T100 Voltage/Continuity Tester
Fluke T120 Voltage/Continuity Tester
Fluke T140 Voltage/Continuity Tester

UK versions are compliant with GS38

7-600 Electrical Tester/1AC VoltAlert Carbon Monoxide Gas Meters

FLUKE®

Fluke 7-600

Fluke 1AC

7-600 Electrical Tester

The Fluke 7-600 is ideal for first-level electrical troubleshooting. The compact design and slide switch offer one-handed operation.

- 4000 count digital display
- Auto Selection simplifies voltage measurements in power environments. (4.5V minimum)
- 400 Ohm Range/Continuity beeper.

1AC VoltAlert

1AC VoltAlert is the pocket-sized ac line voltage detector from Fluke. Easy to use – just touch the tip to an outlet or cord. When it glows red, you know there's voltage in the line.

- Fits in shirt pocket for convenience
- All outer surfaces are non-conductive for safety
- Detects voltage without metallic contact

Operating range: 200-600 volts ac
Batteries: Two AAA Alkaline
Size (H): 148 mm

One Year Warranty

Fluke 1AC VoltAlert 5-pack

- Buy 4 get 1 FREE

Specifications (Fluke 7-600)

Functions	Range and Resolution	Best Accuracy
DC Volts	40.00V, 400.0V, 600V	±(1.5% + 1)
AC Volts	40.00V, 400.0V, 600V	±(2.9% + 3)
Ohms	400.0Ω	±(1.5% + 2)

Battery Life: Alkaline, 650 hours continuous, sleep mode
Size (HxWxD):
142.3 mm x 70.5 mm x 34.6 mm

Weight: 0.286 kg
Two Year Warranty

600V CAT III

LISTED UL CSA TÜV PRODUCT SERVICE GS DVE

Carbon Monoxide Meters

CO-220 Carbon Monoxide Meter

The CO-220 Carbon Monoxide Meter makes it easy to take quick and accurate measurements of CO levels. A large, backlit LCD display shows CO levels from 0 to 1000 PPM. The MAX Hold function stores and displays the maximum CO level.
1 year warranty.

CO-210 Carbon Monoxide Probe

As an accessory to a digital multimeter with dc mV inputs. The Fluke CO-210 displays CO levels from 0 to 1000 PPM. As a stand-alone device, the LED indicator and beeper trigger with increasing frequency as the CO level rises.
1 year warranty.

CO-205 Aspirator Kit

Allows flue gas samples up to 371°C to be drawn with the CO-210 or CO-220 for carbon monoxide measurement. 1 year warranty.

Included Accessories

Fluke 7-600: TL75 Hard Point Test Leads, a 9 volt battery (installed) and owner's manual.
CO-210 + CO-220: C50 soft carrying case and battery.
CO-210: cord to plug into a digital multimeter

Ordering Information

Fluke 7-600	Electrical Tester
Fluke 1AC	VoltAlert
Fluke 1AC-E-5PK	VoltAlert 5-pack
Fluke CO-220	Carbon Monoxide Meter
CO-205	Aspirator Kit
CO-210	Carbon Monoxide Probe

Recommended Accessories

C12A (7-600)
See page 70

TL76 (7-600)
See page 63

330 Series Clamp Meters

Fluke 337

Fluke 336 Fluke 335

Fluke 334 Fluke 333

Take a new look at current measurements

The Fluke 330 Series Clamp Meters offer all the features you need to fit the way you work. The small body and jaws fit perfectly in your hand and into tight places. Meter controls are positioned so that current measurements can be done with one hand. A large backlit display (on most models) is easy to see and a handy Display Hold keeps measurements on the display.

Measuring starting current for motors, lighting, etc. is easy with the in-rush current function (on most models). All models are backed up with a 3 year warranty.

Features

Functions	333	334	335	336	337
True-RMS			●	●	●
Display backlight		●	●	●	●
Auto shut-off	●	●	●	●	●
Display Hold	●	●	●	●	●
Motor start-up current		●	●	●	●
Low battery indication	●	●	●	●	●
Large jaw				●	●
Min/Max					●
Current AC/DC				●	●

Specifications

Functions	Range	333	334	335	336	337
Current AC	0-400.0A	2% ± 5 counts				
	0-600.0A		2% ± 5 counts	2% ± 5 counts	2% ± 5 counts	
	0-999.9A					2% ± 5 counts
Crest Factor	0-600.0A			2.4 @ 500A	3 @ 500A	
				2.0 @ 600A	2.5 @ 600A	
	0-999.9A					3 @ 500A
						2.5@ 600A
						1.42@ 1000A
Current DC	0-600.0A				2% ± 3 counts	
	0-999.9A					2% ± 3 counts
In-rush Current	Integration time		100mS	100mS	100mS	100mS
Voltage AC	0-600.0V	1% ± 5 counts	1% ± 5 counts	1% ± 5 counts	1% ± 5 counts	1% ± 5 counts
Voltage DC	0-600.0V	1% ± 5 counts	1% ± 5 counts	1% ± 5 counts	1% ± 5 counts	1% ± 5 counts
Resistance	0-600.0Ω 0-6000 Ω	1.5% ± 5 counts 1.5% ± 5 counts	1.5% ± 5 counts 1.5% ± 5 counts	1.5% ± 5 counts 1.5% ± 5 counts	1.5% ± 5 counts 1.5% ± 5 counts	1.5% ± 5 counts
Continuity		≤ 30Ω	≤ 30Ω	≤ 30Ω	≤ 30Ω	≤ 30Ω
Frequency	5-400Hz					0.5% ± 5 counts

Battery Life: Alkaline, 150 hours
Size (HxWxD):
238 mm x 79 mm x 41mm (333, 334 and 335)
251 mm x 79 mm x 41 mm (336 and 337)

Jaw Opening: 30 mm (333, 334, 335)
42 mm (336, 337)
Weight: 0.312 kg
Three Year Warranty

600V CAT III

LISTED UL CSA TÜV PRODUCT SERVICE GS True RMS

Included Accessories

C33 Soft case, TL75 test leads, 2 AA alkaline batteries, instruction card and safety information sheet.

Ordering Information

Fluke 333	Clamp Meter
Fluke 334	Clamp Meter
Fluke 335	True-RMS Clamp Meter
Fluke 336	True-RMS Clamp Meter
Fluke 337	True-RMS Clamp Meter

Recommended Accessories

H3
See page 71

TL223
See page 62

320 Series Clamp Meters

Fluke 322

Fluke 321

Big features, small package

The Fluke 321 and 322 are designed to verify the presence of load current, ac voltage and continuity of circuits, switches, fuses and contacts. These small and rugged clamp meters are ideally suited for current measurements up to 400 A in tight cable compartments.

Model 322 also offers DC voltage measurements and has a higher resolution for loads below 40 A.

Features

	321	322
Compact design	●	●
Auto shut-off	●	●
Display Hold	●	●
Low battery indication	●	●
Current AC	●	●
Volts DC		●

Specifications

	321		322		321	322
Functions	**Range**	**Resolution**	**Range**	**Resolution**	**Best Accuracy**	
Current AC	400.0A	0.1A	40.00A 400.0A	0.01A 0.1A	1.8% ± 5 counts (50 - 60Hz) 3.0% ± 5 counts (60Hz – 400Hz)	1.8% ± 5 counts (50 - 60Hz) 3.0% ± 5 counts (60Hz – 400Hz)
Voltage AC	0-400.0V 400-600V	0.1V 1V	0- 400.0V 400 – 600V	0.1V 1V	1.2% ± 5 counts (50 - 400Hz)	1.2% ± 5 counts (50 - 400Hz)
Voltage DC			0 - 400.0V 400 – 600V	0.1V 1V		1% ± 5 counts
Resistance	0 – 400.0Ω	0.1Ω	0 – 400.0Ω	0.1Ω	1% ± 5 counts	1% ± 5 counts
Continuity	≤ 30Ω		≤ 30Ω			

Battery Life: 100 hours typical
(2 AAA carbon zinc)
Size (HxWxD): 190 mm x 63 mm x 35 mm
Jaw Opening: 25 mm

Weight: 0.23 kg
Two Year Warranty

Included Accessories

C23 Soft carrying case, TL75 test leads, (2) AA alkaline batteries, coated instruction card, safety information sheet.

Ordering Information

Fluke 321	Clamp Meter
Fluke 322	Clamp Meter
Fluke 112/322 Kit	Electricians Combo Kit

Combo Kit

Fluke 112/322 Kit
See page 14

Recommended Accessories

H3
See page 71

TL223
See page 62

www.tti.co.uk
Tel: 01480 412451

Installation Testers

The future of installation testing in domestic, commercial and industrial applications is here! Our ergonomic multifunction testers redefine ease-of-use, speed and convenience. Designed for ensuring fixed wiring is installed according to IEC 60364, they perform all the tests required for you to verify safety. In addition, Fluke MegOhmMeters allow rapid testing of insulation resistance with test voltages ranging from 250 V up to 5000 V.

1650 Series Multifunction Installation Testers

FLUKE®

Fluke 1653

Fluke 1652

Fluke 1651

Fluke 1651 is not available in the U.K. and Ireland.

The future of installation testing is here

The Fluke 1650 Series testers verify the safety of electrical installations in domestic, commercial and industrial applications. They can ensure that fixed wiring is safe and correctly installed to meet the requirements of IEC 60364, HD 384 and all relevant local standards. The unique ergonomic design, low weight and padded neck-strap to free your hands, make operating a Fluke 1650 multifuction tester a pleasure. With easy-to-operate controls and large display with exceptionally wide viewing angle, it's also comfortable and safe to use.

- **Easy:** simply turn the knob, press the button and see the results
- **Efficient:** measure loop impedance without tripping RCDs, eliminating the need to bypass them
- **Rugged:** withstands a one-meter drop for demanding field use
- **Safe:** slim probe with test button keeps your eyes on the panel while probing hard to reach points
- **Comfortable:** compact and lightweight (less than 1.2 kg) for all day testing
- **Compliant:** meets all relevant standards including EN 61557 and VDE 0413

Rotary knob labeling is available in six versions. Select from English, French, German, Italian, Spanish or a user-friendly Symbols version.

EN 61557 COMPLIANT

500V CAT III

VDE

BS7671 16th Edition IEE Wiring Regulations IEC 60364.6.61, HD 384

Features

Measurement functions	1651	1652	1653
Voltage & Frequency	●	●	●
Wiring polarity	●	●	●
Insulation Resistance	500, 1000 V	250, 500, 1000 V	50, 100, 250, 500, 1000 V
Continuity	●	●	●
Loop & Line Resistance	●	●	●
PFC/PSC (short-circuit current)	●	●	●
RCD tripping time	●	●	●
RCD tripping current level		● ramp test	● ramp test
Automatic RCD test sequence		●	●
Test DC-sensitive RCD's		●	●
Earth Resistance			●
Phase Sequence Indicator			●
Other features			
Self-test	●	●	●
EN 61557*/VDE 0413 compliant	●	●	●
Illuminated Display	●	●	●
Line voltage indicator	●	●	●
Battery indicator and battery test function	●	●	●
Memory, Interface			
Memory (500 measurements)			●
Computer interface			●
Time stamp (with FlukeView® Forms)			●
Software			option

* 1651: sections 1, 2, 3, 4, 6, 10
1652: sections 1, 2, 3, 4, 6, 10
1653: sections 1, 2, 3, 4, 5, 6, 7, 10

Included Accessories

TP165X Remote Control Probe
TL165X STD Standard Test Lead Set
C1600 Hard Carrying Case
Mains Test Cord
Padded Carrying Strap
Quick Reference Guide
6 AA Cell batteries

Ordering Information

Fluke 1651 Multifunction Installation Tester
Fluke 1652 Multifunction Installation Tester
Fluke 1653 Multifunction Installation Tester

Recommended Accessories (Fluke 1653)

ES165X
Earth Spike Test Kit

FVF-SC2
See page 72

1650 Series Multifunction Installation Testers

FLUKE®

The future of installation testing is here

Slim probe design

Thanks to its slim probe with integral test button, you can safely make one-handed measurements on hard to reach points, while keeping your eyes on the panel.

Professional reports

Up to 500 test results can be stored in the 1653 installation tester. The data stored for each measurement consists of the test function, user selectable test conditions and unique references. Model 1653 has an IR port and adaptor to enable the results to be uploaded to a computer for preparing professional reports using (optional) FlukeView® Forms software.

Complete kit

All 1650 models are equipped with detachable leads that can be replaced in case of damage or loss. A durable hard case will protect your instrument in tough field conditions. A probe with built-in test button comes with every instrument.

Specifications

AC Voltage Measurement

Range	Resolution	Accuracy 50 Hz – 60 Hz	Input Impedance	Overload Protection
500 V	0.1 V	0.8% + 3	3.3 MΩ	660 Vrms

Continuity Testing

Range (autoranging)	Resolution	Test Current	Open Circuit Voltage	Accuracy
20 Ω	0.01 Ω	> 200 mA	> 4 V	± (1.5%+3 digits)
200 Ω	0.1 Ω			
2000 Ω	1 Ω			

Insulation Resistance Measurement

Model	Test Voltage	Insulation Resistance Range	Resolution	Test Current	Accuracy
1653	50 V	10 kΩ to 50 MΩ	0.01 MΩ	1 mA @ 50 kΩ	± (3%+ 3 digits)
1653	100 V	100 kΩ to 20 MΩ 20 MΩ to 100 MΩ	0.01 MΩ 0.1 MΩ	1 mA @ 100 kΩ	± (3%+ 3 digits) ± (3%+ 3 digits)
1653, 1652	250 V	100 kΩ to 20 MΩ 20 MΩ to 200 kΩ	0.01 MΩ 0.1 MΩ	1 mA @ 250 kΩ	± (1.5%+ 3 digits)
1653, 1652, 1651	500 V	100 kΩ to 200 MΩ 20 MΩ to 200 MΩ 200 MΩ to 500 MΩ	0.01 MΩ 0.1 MΩ 1 MΩ	1 mA @ 500 kΩ	± (1.5%+ 3 digits) + 10%
1653, 1652, 1651	1000 V	100 kΩ to 200 MΩ 200 MΩ to 1000 MΩ	0.1 MΩ 1 MΩ	1 mA @ 1 MΩ	± (1.5%+ 3 digits) + 10%

Loop Impedance Measurement

Range	Resolution	Accuracy
20 Ω	0.01 Ω	± (3% + 10 digits)
200 Ω	0.1 Ω	
2000 Ω	1 Ω	

PFC. PSC Test

Range	0 to 50 kA	
Resolution and Units	I_K < 1000 A	1 A
	I_K ≥ 1000 A	0.1 kA
Accuracy	Determined by accuracy of loop resistance and mains voltage measurements	

RCD Testing

RCD Type		1651	1652	1653
[1]AC	[2]G	●	●	●
AC	[3]S	●	●	●
[4]A	G		●	●
A	S		●	●

[1]AC – responds to AC [2]G – General, no delay [3]S – Time delay [4]A - Responds to pulsed signal

Tripping Time Test (ΔT)

Current Settings	Multiplier	Test Current Accuracy	Trip Time Accuracy
10, 30, 100, 300, 500, 1000 mA	x ½	± 0% - 10%	± (1% Reading + 1 digit)
10, 30, 100, 300, 500, 1000 mA	x 1	± 10% - 0%	± (1% Reading + 1 digit)
10. 30 mA	x 5	± 10%	± (1% Reading + 1 digit)

Tripping Current (Ramp) Test – Fluke 1653 and 1652 only

Current Range	Step size	Dwell time		Trip Current Measurement Accuracy
		Type G	Type S	
50% to 110% of RCD's rated current	10% of $I_{\Delta N}$	300 ms/step	500 ms/step	± 5%

Earth Resistance Test (R_E) – Fluke 1653 only

Range	Resolution	Accuracy
200 Ω	0.1 Ω	± (2%+ 5 digits)
2000 Ω	1 Ω	± (3.5%+ 10 digits)

Battery type: Alkaline supplied. usable with 1.2 V NiCD or NiMH rechargeable batteries
Size (HxWxD): 100 mm x 250 mm x 125 mm

Weight: 1.17 kg
Three Years Warranty

1550B MegOhmMeter

FLUKE®

Fluke 1550B

Digital insulation testing up to 5000 Volts

The Fluke 1550B is a digital insulation tester capable of testing switchgear, motors, generators and cables at up to 5000 V DC. It can be used for a wide range of tests: from simple spot checks to timed tests and breakdown tests. Measurement storage and PC interface software make it ideal for preventive maintenance.

- Test voltages of 250 V, 500 V, 1000 V, 2500 V, 5000 V
- Capable of testing in 50 V increments between 250 V and 1000 V and 100 V increments between 1000 V and 5000 V
- Measures 0 to 1 Tera-Ohm
- Warning voltage function alerts the user that line voltage is present and gives the voltage reading up to 600V AC or DC
- Guard system eliminates the effect of surface leakage current on high-resistance measurements
- Large digital/analog LCD shows detailed measurement data
- Cable or insulation capacitance
- Leakage current
- Ramp function (0-5000 V DC) for breakdown testing
- Timer 1 to 99 minutes
- Polarization index and dielectric absorption calculated automatically
- 99 memory locations store all measurements parameters
- Includes Quicklink 1550B Software and Optical Interface cable

600V CAT III

LISTED

Specifications

Test Voltage (DC)	Range	Accuracy (+/- reading)
250V	200kΩ to 5GΩ	5%
	5GΩ to 50GΩ	20%
500V	200kΩ to 10GΩ	5%
	10GΩ to 100GΩ	20%
1000V	200kΩ to 20GΩ	5%
	20GΩ to 200GΩ	20%
2500V	200kΩ to 50GΩ	5%
	50GΩ to 500GΩ	20%
5000V	200kΩ to 100GΩ	5%
	100GΩ to 1TΩ	20%
Short circuit current	greater than 1 mA and less than 2mA	
Bar graph range	0 to 1TΩ	
Insulation test voltage accuracy	0% to + 10% at 1mA load current	
Induced AC mains current rejection	2 mA maximum	
Charging rate for capacitive load	5 seconds per µF	
Leakage current	1nA to 2mA	± (5% + 2nA)
Capacitance measurements	0.01µF to 15.00µF	± (15% rdg + 0.03µF)
Live circuit indicator	30V to 600V AC/DC, 50/60Hz	± (5% + 2V)
Timer increments; indicated to within 1 second	1 to 99 minutes; settable in 1 minute	
Ramp	0% to 100% of selected test voltage, or until breakdown.	

Operating Temperature: -20°C to 50°C
Storage Temperature: -20°C to 65°C
Relative humidity: 80% at 31°C, 50% at 50°C
Dust/water resistance: IP40
Operating Altitude: 0 to 2,000 mtrs.

Batteries: 12 volt, lead-acid, rechargeable
Size (HxWxD): 170 mm x 242 mm x 330 mm
Weight: 4 kg (with battery)
Two Year Warranty

Included Accessories

Test leads, 5000 V-rated probes, Alligator clips, Interface cable
Quicklink 1550B PC software, soft carrying case with water-proof bottom, instruction manual

Ordering Information

Fluke 1550B MegOhmMeter

1520 MegOhmMeter

Fluke 1520

Insulation testing you can depend on

The Fluke 1520 MegOhmMeter is a handy insulation resistance tester that also measures voltage and checks connections with its Lo-Ohms function.

- Large, backlit LCD with analog bar graph and digital display
- Three output voltages for insulation resistance testing: 250V, 500V, 1000V
- Insulation resistance testing up to 4000 MΩ; switches automatically to voltage measurement when voltage is greater than 30V AC or 30V DC.
- ac/dc voltage measurement up to 600V
- Lo-Ohms function for testing connections
- Last reading memory display
- 4 C-cell batteries for up to 5,000 tests per EN61557-2, with battery-life indicator and auto shut-off.
- Autodischarge of capacitive voltage charges
- Rugged, splash-proof case with impact absorbing holster

Specifications

Function	Range	Accuracy	Resolution
Insulation Resistance			
Auto ranges	4.000 MΩ, 40.00 MΩ, 400.0 MΩ, 4000 MΩ	To 100 MΩ: 2% + 2 counts over 100 MΩ: 10% + 2 counts +1%/GΩ	0.001 MΩ to 10 MΩ
Test voltages	250V, 500V, 1000V	+ 20%, - 0%	
Max. measurement current	1 mA		
Audible/visible voltage warning	≥30V ac or dc		
Lo-Ohms			
Resistance	0 to 40.00Ω	2% + 2 counts	0.01Ω
Analog bar graph	0 to 100Ω		
Audible/visible voltage warning	≥30V ac or dc		
Resistance			
Resistance	4 kΩ	2% + 2 counts	1Ω
Analog bar graph	0 to 10kΩ		
Voltage			
Voltage	0 to 600V ac (50/60 Hz)	2% + 2 counts	1V

Operating Temperature: -10°C to +50°C
Storage Temperature: -40°C to +70°C
Humidity (Without Condensation): 75% RH (40°C)
Dust/ water resistance: IP42 per IEC 529
Operating Altitude: 2,500 meters

Batteries: 4 C size 1.5V alkaline
Size (HxWxD): 241 mm x 108 mm x 72 mm
Weight: 1.1 kg
Three Year Warranty

600V CAT III

Included Accessories

TL27 heavy duty test leads, TP74 lantern tip test probes, AC285 large jaw alligator clips, protective holster with hand strap, C43 carrying case, instruction manual

Ordering Information

Fluke 1520 MegOhmMeter

Recommended Accessories

SH100
See page 71

TL223
See page 62

TPAK
See page 72

www.tti.co.uk
Tel: 01480 412451

Power Quality Tools

Fluke revolutionized single-phase power quality analysis by combining oscilloscope, multimeter and data recorder functionality in one dedicated handheld instrument. Now we empower you to pinpoint three-phase power quality problems faster, safer and in more detail.

Power Quality Analyzers

In industry, healthcare, and business – in fact wherever electrical and electronic equipment is indispensable – power quality plays a critical role in maintaining continuity. Non-linear loads, switching, load changes and equipment problems can result in poor power quality. Poor power quality is not only costly in terms of wasted energy and unnecessary downtime, it's also dangerous and increases risk of equipment failure.

Fluke has an unrivalled range of power quality analyzers to help you maintain high-quality power systems. The tools give you the power to analyze every parameter, power-related event or anomaly faster, safer and in more detail than ever before.

Analyze your power network quickly

Features

	434	433	43B
Application	Three-phase		Single-phase
Inputs	4 voltage and 4 current (for 3 phases and neutral)		1 voltage and 1 current
Measurements			
Vrms, Arms, Hz, W, VAR, VA, PF, Cos φ (DPF), Crest Factors	●	●	●
Harmonics and THD (V,A,W), k-factor	●	●	●
Inter-harmonics	●	Optional*	
kWh and kVARh, kVAh, demand interval	●	Optional*	-
Flicker (Plt, Pst, PF5)	●	●	-
Unbalance	●	●	-
Recorder/AutoTrend	●/●	●/●	●/-
System-Monitor	●	●	-
Real time scope/Phasor diagrams	●/●	●/●	●/-
Dips and swells/Half cycle based	●/●	●/●	●/-
Transient display	●	Optional*	●
Inrush current	●	Optional*	●
EN50160 compliance	●	●	-
IEC61000-4-30, -4-7, -4-15 compliance	●	●	-
Built-in general purpose Scope and DMM	-	-	●
Memory (screens/data)	50/10	25/5 standard 50/10 optional*	20 for screens and data
FlukeView software and interface cable	●	Optional*	Depending on configuration
EN61010 safety rating	600 V CAT IV/1000 V CAT III		600 V CAT III

Optional functionality can be added with upgrade kit. For details see ordering information.

Fluke 43B

A choice of three configurations

	43Basic	43B	43Kit
Current Clamp	200 A AC	500 A AC	500 A AC
SW43W FlukeView Software		●	●
PM9080 Serial Interface Adapter Cable		●	●
C120 Hard Case		●	●
VPS40 Voltage Probe		●	
Fluke 61 IR Thermometer		●	
VR101S Voltage Event Recorder			●

All configurations are delivered with test leads, probes, clips, battery pack, banana-to-BNC adapter and line voltage adapter/battery charger.

Check the Fluke web site for Technical Specifications and Application Notes with the Fluke power quality analyzers.

Three-phase power recorders from Fluke

The Fluke power recorder series is a unique range of instruments that increase your ability to maintain and troubleshoot your plant's power quality. They monitor every aspect of power without blind spots or gaps, on all conductors in your 3-phase distribution system.

Check the Fluke web for more information.

430 Series Three-phase Power Quality Analyzers

New

Fluke 434

Fluke 433

CAT III 1000V
CAT IV 600V

On all inputs

True RMS

Pinpoint power quality problems faster, safer and in greater detail

The Fluke 434 and 433 three-phase power quality analyzers help you locate, predict, prevent and troubleshoot problems in power distribution systems. These easy-to-use handheld tools have many innovative features to give you the details to pinpoint problems faster and safer.

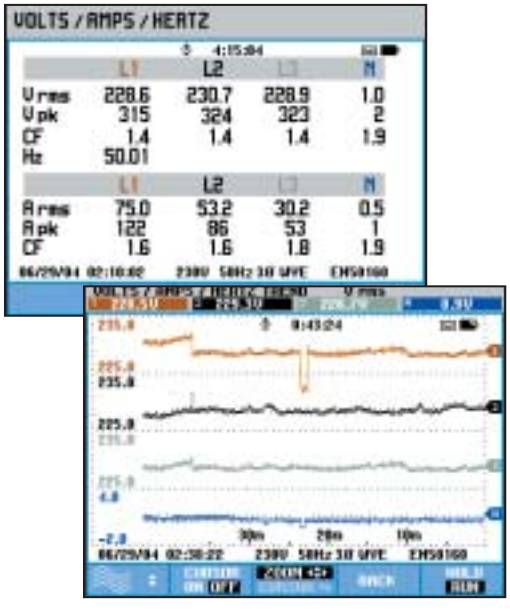
- Complete three-phase troubleshooting tool: measures virtually every power system parameter: voltage, current, frequency, power, power consumption (energy), unbalance and flicker, harmonics and inter-harmonics. Captures events like dips and swells, transients, interruptions and rapid voltage changes.
- AutoTrend: no time wasted setting up additional trend graphs while every measurement is automatically recorded. Analyzes trends using cursors and zoom function, while recording continues in the background.
- System-Monitor: gives immediate insight into power system's quality. Checks conformity to limits specified in EN50160 or to own custom limits.
- Four channels: simultaneously measures voltage and current on all three phases and neutral.
- Automatic transient display: captures up to 40 dips, swells, interruptions or transients automatically.
- Meets the stringent 600 V CAT IV, 1000 V CAT III safety standard required for measurements at the service entrance.
- Rugged, handheld instrument operates for more than 7 hours on included rechargeable NiMH battery pack. Menu-driven interface simplifies operation.
- Extensive data analysis possibilities. Cursors and zoom can be used 'live' while taking the measurements, or 'offline' on stored measurement data. The stored measurements can also be transferred to a PC with FlukeView software (included with Fluke 434).
- Complete package includes everything to get started: 4 current clamps, 5 voltage test leads and clips, line adapter/battery charger and hard case.
- Complies with IEC 61000-4-30 measurement standards.

AutoTrend – Quickly see the trend

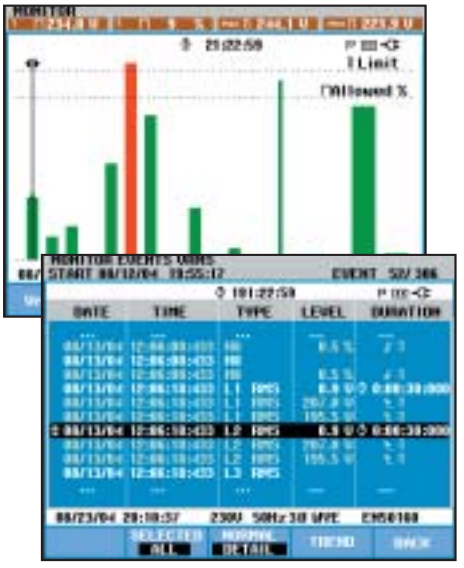
Unique AutoTrend gives you fast insight into changes over time. Every displayed reading is automatically and continuously recorded without having to set up threshold levels or interval times, or having to manually start the process. You can quickly view trends in voltage, current, frequency, power, harmonics or flicker on all three phases plus neutral. And you can analyze the trends using the cursors and zoom function – even while background recording continues.

SystemMonitor – Check performance against EN50160 with ease

With a single push of a button, the unique System-Monitor gives you an overview of power system performance, and checks the compliance of incoming power to EN50160 limits or to your own custom specifications. The overview is shown on a single screen, with color-coded bars clearly indicating which parameters fall outside the limits.



AutoTrend automatically records all displayed parameters in the background.

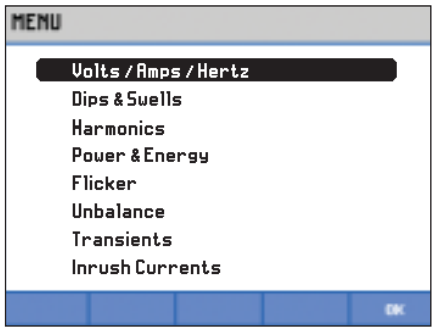


The System-Monitor overview screen gives instant insight into whether the voltage, harmonics, flicker, frequency and the number of dips and swells fall outside the set limits.

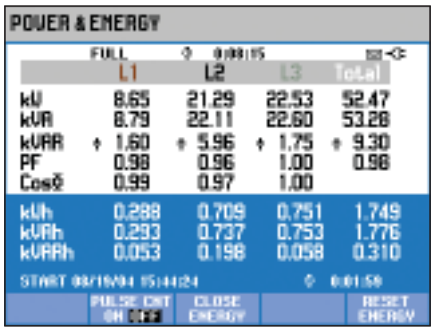
A detailed list is given of all events falling outside de set limits.

430 Series Three-phase Power Quality Analyzers

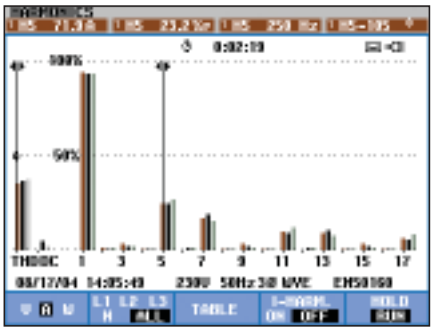
FLUKE®



Simple menu structure with logical function grouping gives fast access to key measurements.



Measure and record power (W), VA and VARs. The 434 adds the ability to record energy consumption.



Track harmonics up to the 50th, and measure and record THD in accordance with IEC61000-4-7 requirements

Fluke 434 plus included accessories

Included Accessories

C430 Hard case with clamp holders
i400s Current clamps (4x)
TLS430 Test Leads and Alligator Clips (4 black, 1 green)
BP190 NiMH Battery Pack (installed)
BC430 Battery charger/Line Voltage Adapter
SW43W FlukeView software (Fluke 434 only)
OC4USB Serial Interface Adapter/Cable (USB) (Fluke 434 only)
WC100 Color localization set
Getting Started (printed)
User Manual (CD-ROM)

Ordering information

Fluke 433	Power Quality Analyzer (three-phase)
Fluke 434	Power Quality Analyzer (three-phase)
Fluke 433/UGK	Upgrade Kit for Fluke 433 (includes 433AF, OC4USB and SW43W)
Fluke 433/AF*	Advanced Functions Upgrade Kit for Fluke 433
OC4USB	Serial Interface Adapter/Cable (USB)
PM9080	Serial Interface Adapter/Cable (RS232)
SW43W	FlukeView Software

***Includes:**
Inter-harmonics, energy, transient display and inrush current, data memory extension

Specifications

(Check the Fluke web for detailed specifications)

Inputs	Number of inputs	4 voltage and current (3 phases + neutral)	
	Maximum input voltage	1000 Vrms (6kV Peak)	
	Maximum sampling speed	200 kS/s on each channel simultaneously	
		Measurement range	**Accuracy**
Volt/Amps/Hertz	Vrms (AC+DC)	1…1000 V	± 0.5% of Vnom
	Vpk	1…1400 V	5% of Vnom
	Crest factor	1.0 … > 2.8	± 5%
	Arms (AC+DC)	0…20,000 A	± 1% ± 5 counts
	Apeak	0 - 5500 A	5%
	Crest factor	1 … 10	± 5%
	Hz 50Hz nominal	42.50 … 57.50 Hz	± 0.1% of Vnom
Dips and swells	Vrms (AC+DC) [2]	0.0% ….100% of Vnom	± 1% of Vnom
	Arms (AC+DC) [2]	0 … 20,000 A[1]	± 1% ± 5 counts
Harmonics	Harmonic (interharmonic) (n)	DC, 1..50; (Off, 1..49) measured relative to fundamental or to total rms	
	Vrms	0.0 … 1000 V	± 5% ± 2 counts
	Arms	0.0 … 4000 mV x clamp scaling	± 5% ± 5 counts
	Watts	depends clamp scaling	± 5% ± n x 2% or reading, ± 10 counts
	DC voltage	0.0 … 1000 V	± 5% ± 10 counts
	THD	0.0 … 100.0 %	± 2.5%
	Hz	0 … 3500 Hz	± 1 Hz
	Phase angle	-360° ... +360°	± n x 1.5°
Power and Energy	Watt, VA, VAR	1.0 … 20.00 MVA[1]	± 1.5% ± 10 counts
	kWh, kVAh, kVARh	00.00 …200.0 GVAh[1]	± 1.5% ± 10 counts
	Power Factor/ Cos φ / DPF	0…1	± 0.03
Flicker	Pst (1min), Pst, Plt, PF5	0.00 … 20.00	±5%
Unbalance	Volts	0.0 … 5.0%	± 0.5%
	Current	0.0 … 20%	± 1%
Transient capture	Volts	± 6000 V	± 2.5% of Vrms
	Minimum detect duration	5 µs (200 kS/s sampling)	
Inrush mode	Arms (AC+DC)	0.000 … 20.00 kA[1]	± 1% of meas ± 5 counts
	Inrush duration (selectable)	7.5 s … 30 min	± 20 ms (Fnom = 50 Hz)
AutoTrend recording	Sampling	Up to 100 readings/s continuous sampling per channel	
	Memory	Up to 3600 min, max and avg points for each reading	
	Recording time	Up to 450 days	
	Zoom	Up to 12x horizontal zoom	
Memory	Screens	50 on Fluke 434; 25 on Fluke 433	
	Data	10 on Fluke 434; 5 on Fluke 433	
Standards	Measurement methods used	IEC61000-4-30 class A; EN50160; IEC 61000-4-15; IEC 61000-4-7	

The advanced functions Interharmonics, Energy, Transients and Inrush are optional for the Fluke 433 and standard available on the Fluke 434.

[1] depending clamp scaling
[2] Value is measured over 1 cycle, commencing at a fundamental zero crossing, and refreshed each half-cycle

Battery life: > 7 hours with rechargeable NiMH (installed); **Battery charging time:** 4 hours typical
Safety: EN61010-1 (2nd edition) pollution degree 2; 1000 V CAT III / 600 V CAT IV
Case: Rugged, shock proof with integrated protective holster, IP51 (drip and dust proof)
Shock: 30 g; Vibration: 3g according to MIL-PRF-28800F Class 2
Operating temperature: 0°C to +50°C
Size (HxWxD): 256 mm x 169 mm x 64 mm; **Weight:** 2 kg
Three Years Warranty

Recommended Accessories

i2000flex PQ4
See page 76

i1000s
See page 66

80i-110s
See page 67

SW43W

OC4USB
See page 47

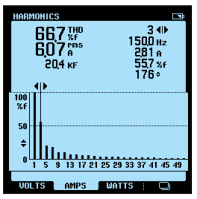
43B Single-phase Power Quality Analyzer

FLUKE®

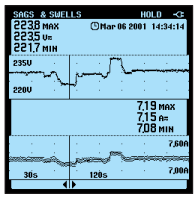
Fluke 43B

The perfect tool for tracking down single-phase power-related problems

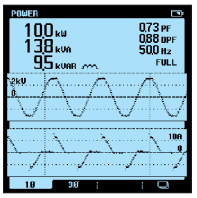
The Fluke 43B is the choice for diagnosing and troubleshooting power quality and general equipment failures. Ease to use thanks to menu selection of the power modes, it combines the capabilities of a power quality analyzer, a 20 MHz oscilloscope, a multimeter and a data recorder in a single instrument.



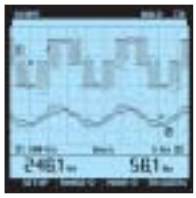
- Voltage, current, and power harmonics
- Up to 51st harmonic
- Total harmonic distortion (THD)
- Phase angle of individual harmonics



- Continuously measure volts and amps on a cycle-by-cycle basis for up to 16 days
- Use cursors to read time and date of sags and swells



- Watts, power factor, COS φ, VA and VAR
- Voltage and current waveforms



- Connect-and-View™ scope for quick waveform display
- View voltage and current channels simultaneously

600V CAT III
On all inputs

LISTED UL CSA True RMS

Specifications

(Check the Fluke web for detailed specifications)

Menu items	Measurements	Ranges	Accuracy
Volts/Amps/Hz	Volts Amps Mains frequency CF Crest Factor	5.000 V–1250 V 50.00A–50.00 kA 40.0 – 70.0 Hz 1.0 to 10.0	±(1%+10) ± (1%+10) ± (0.5%+2) ± (5%+1)
Power	Watts, VAR, VA PF, DPF, COS φ	250 W–1.56 GW 0.25–0.9 0.90–1.00	± (4%+4) ± 0.04 ± 0.03
Harmonics	Volts Amps Watts K-factor	1st to 51st harmonic 1st to 51st 1st to 51st 1.0 to 30.0	± (3%+2) to ± (15%+5) ± (3%+8) to ± (15%+5) ± (5%+2) to ± (30%+5) ± 10%
Sags & Swells	Voltage and Current	4 min–16 days selectable	± (2%+10)
Transient Capture	40 ns pulse width Up to 40 transients	Select 20/50/100/200% above or below line voltage	± 5% of full scale
Inrush Current	1sec. to 5 min selectable	1 A to 1000 A	± 5% of full scale
Ohms/Continuity/ Capacitance	Ohms Capacitance	500.0 Ω to 30.00 MΩ 50.00 nF to 500.0 µF	± (0.6%+5) ± (2%+10)
Temperature (with accessory)	°C °F	-100.0°C to 400.0°C -200.0°F to 800.0°F	± (0.5%+5)
Scope	DC, AC, AC+DC, peak, peak-peak, Hz, duty cycle, phase, pulse width, crest factor	Sampling rate: Bandwidth: Voltage BW (Channel 1) Current BW (Channel 2)	25 MS/sec 20 MHz 15 kHz
Screen saves	All functions	20 screens	
Recording	V/A/Hz, Power, Harmonics, Ω/Cap, Temperature, Scope	4 min – 16 days selectable	Select any two parameters display mode in each

Battery life: Rechargeable Ni-Cd pack (charger included), 4 hrs typical (continuous)
Shock & Vibration: Mil 28800E, Type 3, Class III, Style B.
Operating temperature: 0°C to 50°C; Case: IP51 (dust, drip, waterproof)
Size (HxWxD): 232 mm x 115 mm x 50 mm; **Weight:** 1.1 kg
Three Years Warranty

Included (replacement) Accessories

Fluke 43Basic, Fluke43B and Fluke43Kit: TL24 (TL224) test lead set, AC20 (AC220) alligator clip set, TP4 test probe set, BP120 rechargeable battery pack, BB120 Shielded BNC adapter, PM8907 line adapter/charger, user and application manual.
Fluke43Basic: i200s AC current clamp.
Fluke43B and *Fluke 43Kit:* 80i-500s AC current clamp, AC85 (AC285) alligator clip set, TP1 test probe set, C120 hard carrying case, PM9080 interface cable, SW43W FlukeView Software.
Fluke 43B: VPS 40 voltage probe, Fluke 61 IR thermometer
Fluke43 Kit: VR101S voltage event recorder.

Ordering Information

Fluke 43Basic	Power Quality Analyzer (single-phase)
Fluke 43B	Power Quality Analyzer (single-phase)
Fluke 43Kit	Power Quality Analyzer (single-phase)

Recommended Accessories

C789 (43 Basic)
See page 70

i2000flex
See page 66

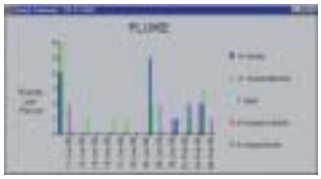
i1000s
See page 66

80TK
See page 68

PAC91
See page 47

VR 101S Voltage Event Recorder System

FLUKE®



300V CAT III
On all inputs

LISTED UL CSA True RMS

Set up, plug in, download, and analyze

The Fluke VR101S is the perfect system for catching sags, swells, transients, outages and frequency variations on line voltage at receptacles, where the most sensitive loads are connected. The VR101S is a starter system that includes a compact VR101 event recorder, an optical interface cable, and EventView™ software that turns your PC into a power quality reporting tool. Additional VR101 event recorders can be purchased individually, so you can monitor several voltage conditions at multiple locations at once.

To set up a VR101 event recorder, just enter the event capture limit parameters on your PC and load them into the recorder. EventView software and the optical interface cable make it easy. Then plug the recorder into the outlet you need to test, and leave it—there's no need to leave a computer hooked up.

The compact recorder stores any voltage event that goes outside your limits.

The VR101 recorder can store up to as many as 4000 events and a flashing LED tells you when events have been captured. To get data out of the recorder, hook it back up to your computer. EventView software can download a complete history of the events that occurred while the recorder was plugged into the receptacle. The software lets you build a detailed report of sags, swells, transients, outages and frequency variations with time-stamps and durations.

Specifications

(Check the Fluke web for detailed specifications)

Electrical (voltage versions, plug style, and manual languages are determined by country			
Voltage version	**Operating range**	**Nominal frequencies**	**Power consumption**
120V Version	70V to 140V	50 Hz to 60 Hz	2W
230V Version	140V to 270V	50 Hz to 60 Hz	3W

Sags, Swells & Outage Measurements				
Voltage version		**Range**	**Accuracy**	**Resolution**
120V Version	Hot-to-neutral	0 to 200 Vrms	± 2 Vrms	1 Vrms
120V Version	Neutral-to-ground	3 to 200 Vrms	± 2 Vrms	1 Vrms
230V Version	Hot-to-neutral	0 to 400 Vrms	± 4 Vrms	2 Vrms
230V Version	Neutral-to-ground	3 to 150 Vrms	± 2 Vrms	1 Vrms

Transient Measurements, Minimum pulse widh: 1µs			
	Range	**Accuracy**	**Resolution**
Hot-to-neutral	100 to 2500 Vpeak	± (10% reading + 10V)	10V
Neutral-to-ground	50 to 2500 Vpeak	± (10% reading + 10V)	10V
Phase angle	20° to 180° 200° to 360°	± 1°	1°

Time Measurements: Events < 1 second			
		Accuracy	**Resolution**
Hot-to-neutral		± 0.5 cycles	0.5 cycles
Neutral-to-ground		± 1 cycle	1 cycle

Frequency Measurement:			
	Range		**Resolution**
	45...65Hz		0.1 Hz

Events ≥ 1 second (time stamp)		
	Accuracy	**Resolution**
	± (2 sec/day + 8 sec)	8 sec

Environmental	
Operating temperature	-40 to 70° C
Relative humidity	0 to 95% (non-condensing)

Computer Hardware Requirements

IBM PC or 100% compatible, with Windows 3.1 or Windows 95/98/NT/XP or 2000 installed and operating. At least one free RS-232 serial port. A pointing device (recommended). 2 MB hard drive space. 4 MB RAM (8 MB for Windows 95/98 or higher).

Memory size: 4000 events
Battery type: 3.5 Lithium (non-replaceable)
Battery life: 7 years
Size (HxWxD): 62 mm x 68 mm x 85 mm

Weight: 0.12 kg
One Year Warranty

Included Accessories

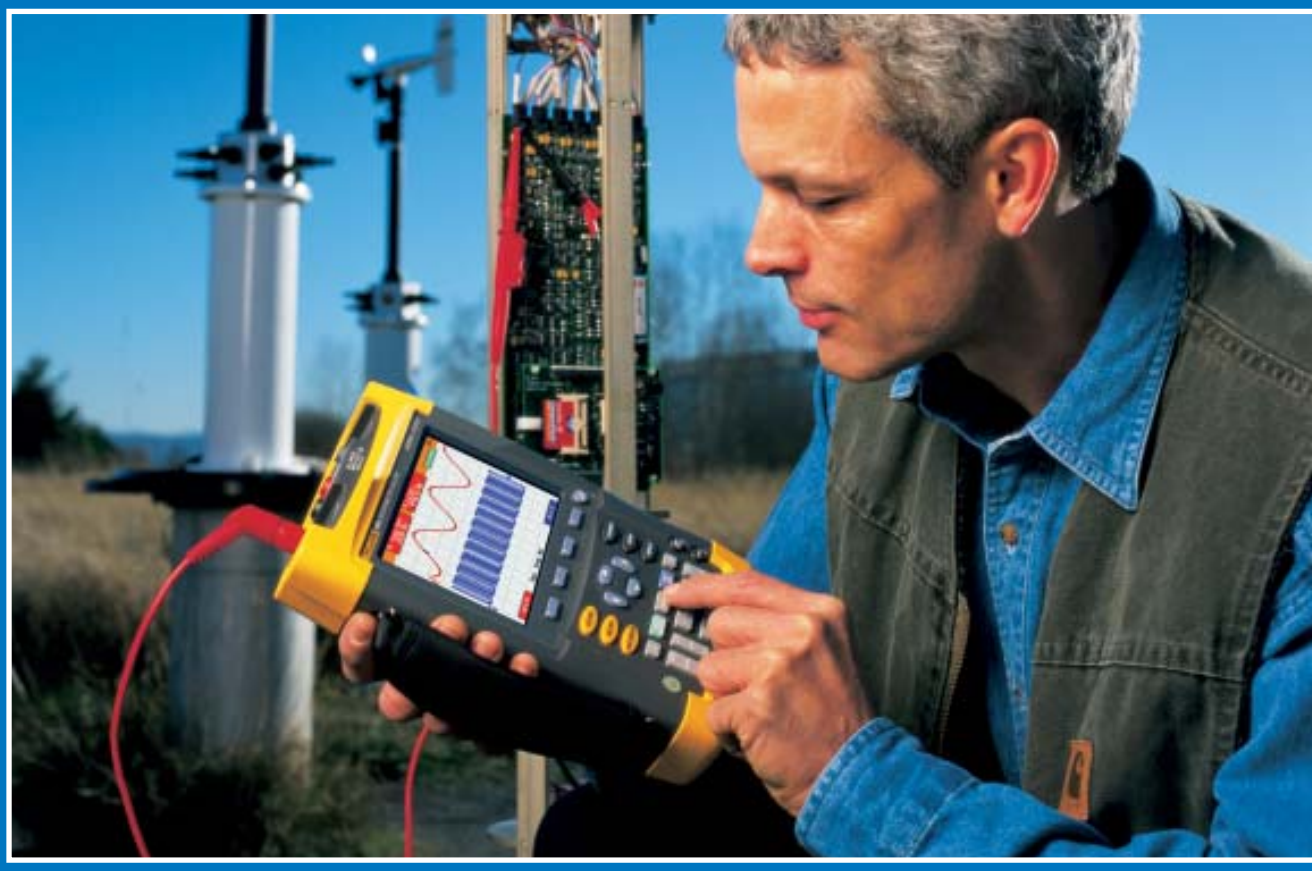
VR101S: Optical interface cable
EventView Software

Ordering Information

Fluke VR101S Voltage Event Recorder System
Fluke VR101 Voltage Event Recorder
(Note: At least one VR101S is required for proper operation.)

ScopeMeter® Test Tools

With the original ScopeMeter, we transformed the oscilloscope category beyond recognition, and we still lead the way today. From rugged solutions for industrial applications to full-colour models that pack top-end bench oscilloscope specifications into hand-held, battery powered instruments. In short, ScopeMeter provides you with unmatched speed, performance and analysis power while working on site.



www.tti.co.uk
Tel: 01480 412451

Oscilloscopes for field applications

The ScopeMeter 190 Series of high-end performance oscilloscopes have bandwidth of 60, 100 and 200 MHz and sample rates up to 2.5 GS/s. The 190C Series adds a high-resolution color display that has a fast update rate, waveform pass/fail testing and a digital persistence mode – making the analysis of complex and dynamic signals much easier.

For industrial electronic or electro mechanical applications, the 120 Series Industrial ScopeMeter, with a 20 or 40 MHz bandwidth and Connect-and-View™ triggering for an instant, stable display will get the job done.

Features

	199C	196C	199B	196B	192B	124	123
Oscilloscope Features							
LCD Display	Color		B/W			B/W	
Persistence	Digital		●	●	●		
Waveform reference	●	●	●	●	●		
Automatic pass fail testing	●	●					
Cursors and zoom	●	●	●	●	●	Cursors	
Connect-and-View Triggering	●	●	●	●	●	●	●
Video triggering with line count	●	●	●	●	●	●	●
Selectable pulse width triggering	●	●	●	●	●		
Capture and replay of last 100 screens	●	●	●	●	●		
Dual Input TrendPlot	With cursors and zoom					●	●
Memory for screens and setups	10 screens and setups					20	10
Recorder memories, each can store 100 scope screens, a ScopeRecord or a TrendPlot	2 recorder memories						
1000V Independently floating isolated inputs	●	●	●	●	●		
Meter measurements: VAC RMS, VAC+DC, VDC, Ohms, Continuity, Diode, Amps, Temp. (°C, °F)	●	●	●	●	●	●	●
Waveform mathematics: A + B, A – B, A x B, A versus B (X-Y-mode)	●	●	●	●	●		
Frequency Spectrum Analysis using FFT	●	●					
Capacitance and frequency measurements	-/●	-/●	-/●	-/●	-/●	●/●	●/●
Rugged, Dust and drip proof case.	●	●	●	●	●	●	●
PC and Printer Interface via optically isolated RS-232 Adapter/Cable (PM9080)	1)	1)	1)	1)	1)	1)	1)
FlukeView® for Windows® Software (SW90W)	1)	1)	1)	1)	1)	1)	1)

● Standard equipped 1) Optional

Specifications

(Check the Fluke web for detailed specifications)

	199C	196C	199B	196B	192B	124	123
Oscilloscope Specifications							
Bandwidth	200 MHz	100 MHz	200 MHz	100 MHz	60 MHz	40 MHz	20 MHz
Maximum real time sample rate	2.5 GS/s	1 GS/s	2.5 GS/s	1 GS/s	500 MS/s	25 MS/s	
Input sensitivity	2 mV to 100 V/div		5 mV to 100 V/div			5 mV-500 V/div	
Timebase range	5 ns/div to 2 min/div				10 ns/div to 2 min/div	10 ns/div to 1 min/div	20 ns/div to 1 min/div
Inputs and digitizers	2 plus external trigger/DMM input					2	
Independently floating isolated inputs	Up to 1000 V between inputs, references and ground						
Max. record length … in Scope mode: … in ScopeRecord mode:	3.000 points per input 27.500 points per input or more (5 ms/div…2 min/div.)					512 min/max points per input	
Glitch capture	Up to 3 ns using Pulse Width triggering; 50 ns peak detect at 5 µs/div. to 1 min/div.					40 nsec	
Scope measurements	7 cursor+30 automatic					cursors + 26 automatic	26 automatic
True RMS multimeter	5000 counts, single input					5000 counts, dual input	
General Specifications							
Line Power	Adapter/Battery charger included						
Battery power	4 hours NiMH					7 hours NiMH	5 hours NiCad
Size	256 x 169 x 64 mm					232 x 115 x 50 mm	
Weight	2 kg					1.2 kg	
Safety certified (EN61010-1)	1000 V CAT II/600 V CAT III					600 V CAT III	
Warranty	3 years					3 years	

Check the Fluke web site for Technical Specifications and Application Notes for the Fluke ScopeMeters

ScopeMeter® 190 Series

Fluke 199C

Fluke 196C

Fluke 199B

Fluke 196B

Fluke 192B

Speed, performance and analysis power

For more demanding applications, the ScopeMeter 190 Series high performance oscilloscopes offer specifications usually found on top-end bench instruments. With up to 200 MHz bandwidth, 2.5 GS/s real-time sampling and a deep memory of 27 500 points per input they're ideal for engineers who need the full capabilities of a high performance oscilloscope in a handheld, battery powered instrument.

- Dual input – 60, 100 or 200 MHz models
- Up to 2.5 GS/s real time sampling per input
- Choice between a high resolution Color or Black and White display
- (NEW) High waveform resolution of 3000 datapoints per channel
- Digital Persistence for analyzing complex dynamic waveforms like on an analog scope (190C Series only)
- Fast display update rate for seeing dynamic behavior instantaneously
- Connect&View™ automatic triggering, a full range of manual triggering modes plus external triggering.
- Automatic capture and replay of 100 screens
- 27 500 points per input record length using ScopeRecord mode
- Up to 1000 V independently floating isolated inputs
- Waveform reference for visual comparisons and automatic pass/fail testing of waveforms (190C Series only)
- V_{pwm} function for motor drive and frequency inverter applications.
- Waveform mathematics: Add, Subtract and Multiply
- (NEW) Frequency Spectrum Analysis using FFT (190C)
- Cursors, zoom and real-time clock
- 30 automatic waveform measurements
- Four hours rechargeable Ni-MH battery pack
- Includes a 5000 count true-RMS multimeter and a TrendPlot™ paperless recorder

ScopeMeter for medical applications

The ScopeMeter 190 Series is also available optimized for measurements on medical imaging equipment and video display systems. For more information please visit the Fluke web site.

Automatic capture and replay of 100 screens

Scope users know how frustrating it is to see an one time anomaly flash by never to be seen again. Not with the ScopeMeter 190 Series! Now you can look back in time with a touch of the replay button. In normal use, the instrument continuously memorizes the last 100 screens. Each time a new screen is acquired, the oldest is discarded. At any moment you can "freeze" the last 100 screens and scroll through picture-by-picture or replay as a 'live' animation. Cursors can be used for further analysis. You can even use the advanced trigger capabilities to capture up to 100 specific events. Two sets of 100 captured screens with individual time stamps can be stored for later recall or download to a PC.

LISTED UL CSA True RMS

600V CAT III
On all inputs

See dynamic signal behavior instantaneously

The new Digital Persistence mode helps to find anomalies and to analyze complex dynamic signals by showing the waveforms amplitude distribution over time using multiple intensity levels and user selectable decay time – it's as if you're looking at the display of an analog, real time oscilloscope! A fast display update rate reveals signal changes instantaneously, useful for instance when making adjustments to a system under test.

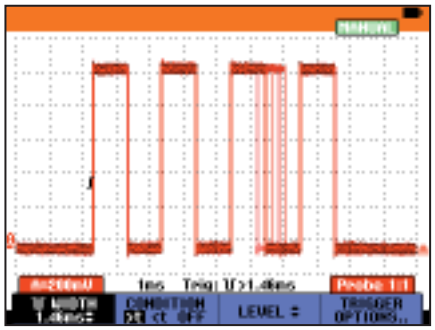
Frequency Spectrum Analysis 190C (New)

All 190C Color ScopeMeters include Frequency Spectrum Analysis on Fast Fourier Transformation (FFT) analysis as a standard feature.
This makes it possible to identify the individual frequency components contained in a signal. The spectrum analysis function is also handy to reveal the effects of vibration, signal interference or crosstalk. An automatic window function assures optimal windowing, although you may manually select your preferred time window.

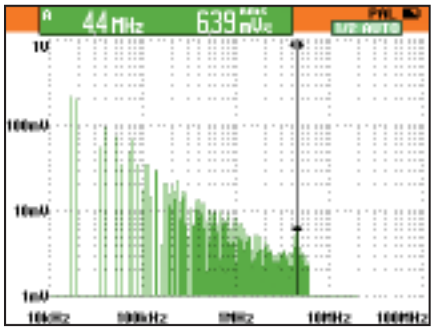
FlukeView® Software for documenting, archiving and analysis

FlukeView® for Windows® helps you get more out of your ScopeMeter by:

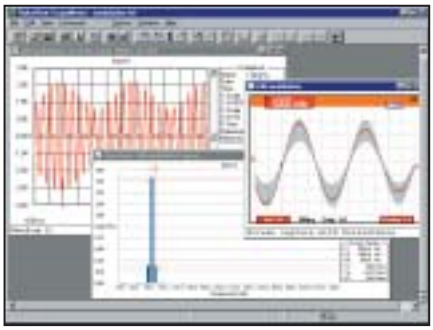
- Documenting – transfer waveforms, screens and measurement data from the ScopeMeter to a PC. Print or import the data into your report
- Archiving – create a library of waveforms with your comments for easy reference and comparison
- Analysis – use cursors, perform spectrum analysis or export data to other analysis programs



Pulse width fluctuations are clearly visible using Digital Persistence



Frequency Spectrum shows an overview of frequencies contained in a signal.



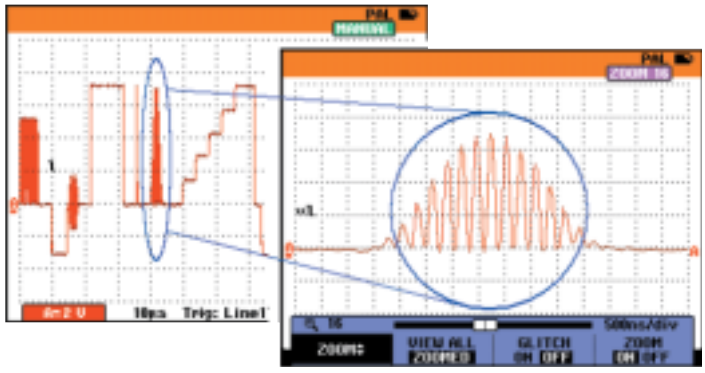
Fluke ViewScreen

Included Accessories

BC190 Battery Charger
BP190 NiMH Battery Pack
VPS200-G + VPS200-R Voltage Probe
TL75 Hard Point Test Lead Set
user's manual (CD-Rom)

Ordering Information

Fluke 192B	ScopeMeter (60MHz, 500 MS/s)
Fluke 196B	ScopeMeter (100 MHz, 1 GS/s))
Fluke 199B	ScopeMeter (200 MHz, 2.5 Gs/s)
Fluke 196C	Color ScopeMeter (100 MHz, 1 GS/s)
Fluke 199C	Color ScopeMeter (200 MHz, 2.5 GS/s)
Fluke 192B/S	192B + SCC 190 kit option
Fluke 196B/S	196B + SCC 190 kit option
Fluke 199B/S	199B + SCC 190 kit option
Fluke 196C/S	196C + SCC 190 kit option
Fluke 199C/S	199C + SCC 190 kit option
SCC190	FlukeView Software, PM9080 cable, carrying case for Fluke 190B and 190C Series
SW90W	FlukeView Software



Thanks to the deeper memory, very small parts of the waveform can be studied in full detail using "zoom".

See page 43 for specifications.

Recommended Accessories

SCC190

C195
See page 70

OC4USB
See page 47

i200s
See page 66

SCC198
See page 65

ScopeMeter® 120 Series

FLUKE®

Fluke 124

Fluke 123

600V CAT III
On all inputs

LISTED UL CSA True RMS

Three-in-one simplicity

The compact ScopeMeter 120 Series is the rugged solution for industrial troubleshooting and installation applications. It's a truly integrated test tool, with oscilloscope, multimeter and "paperless" recorder in one affordable, easy-to-use instrument. Find fast answers to problems in machinery, instrumentation, control and power systems.

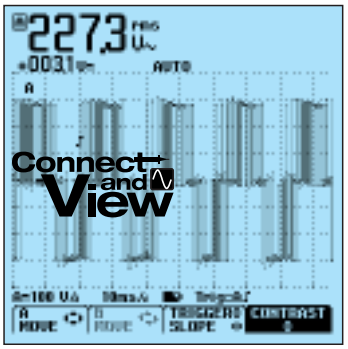
- Dual-input 40 MHz or 20 MHz digital oscilloscope
- Two 5,000 counts true-RMS digital multimeters
- A dual-input TrendPlot™ recorder
- Connect-and-View™ trigger simplicity for hands-off operation
- Shielded test leads for oscilloscope, resistance and continuity measurements
- 10:1 Voltage Probe included with Fluke 124 for high frequency measurements
- Up to 7 hours battery operation
- 600 V CAT III safety certified
- Optically isolated RS-232 interface
- Rugged, compact case

Connect-and-View™ triggering for an instant, stable display

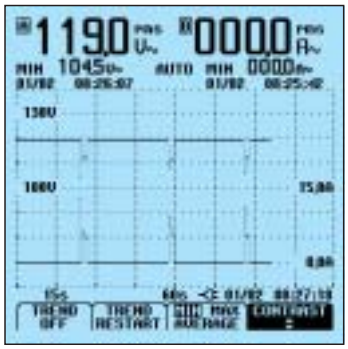
Scope users know how difficult triggering can be. Wrong settings show unstable and sometimes wrong results. Fluke's unique Connect-and-View recognizes signal patterns, and automatically sets up correct triggering. It provides a stable, reliable and repeatable display of virtually any signal – including motordrive and control signals – without touching a button. Signal changes are instantly recognized and settings adjusted for – once again – a stable display. Benefit from the speed and convenience when measuring a number of testpoints in quick succession.

Use TrendPlot™ to help find intermittents fast

The toughest faults to find are those that happen only once in a while: intermittents. They can be caused by bad connections, dust, dirt, corrosion or simply broken wiring or connectors. You may not be around to see it – your Fluke ScopeMeter will. In this "paperless recorder" de, you can plot the minimum and maximum peak values and average over time – up to 22 days (Fluke 190 Series) or 16 days (Fluke 120 Series). The two inputs can plot any combination of volts, amps, temperature, frequency and phase – with time and data stamp – to help lead you to the cause of those faults quickly.



Connect-and-View captures even the most complex motor drive signals



Cursors help you analyze the captured TrendPlot

See page 43 for specifications.

Included Accessories

PM 8907 line adapter/charger, STL120 shielded test leads set, AC120 Alligator Clips, HC120 Hook Clips, BB120 shielded BNC adapter, BP120 NiCad, battery pack (Fluke 123), BP130 NiMH, battery pack (Fluke 124), VPS40 Voltage Probe (Fluke 124), user's manual (cd-rom)

Ordering Information

Fluke 123	Industrial ScopeMeter® (20MHz)
Fluke 123/S	Industrial ScopeMeter® (20MHz) including SCC120 kit option
Fluke 124	Industrial ScopeMeter® (40MHz)
Fluke 124/S	Industrial ScopeMeter® (40MHz) including SCC120 kit option
SCC120	FlukeView Software, PM9080 Cable, Carrying Case Kit for Fluke 120 series
SW90W	FlukeView Software

Recommended Accessories

SCC120

C43
See page 70

DP120
See page 47

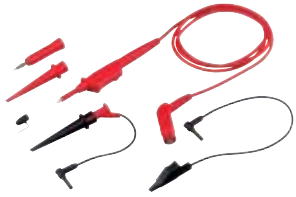
OC4USB
See page 47

SCC128
See page 65

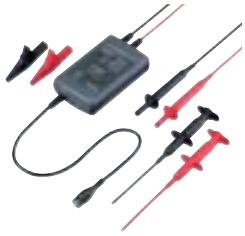
ScopeMeter® Accessories

Safety designed oscilloscope probes

VPS40



VPS100/200 series



DP120

	VPS40	VPS200-R	VPS200-G	VPS201	VPS100-R	VPS100	VPS250	VPS121	DP120	PM8918/301
Description	Voltage Probe Set	Voltage Probe Set	Voltage Probe Set	Voltage Probe Set	Voltage Probe Set	Voltage Probe Set	Voltage Probe Set	Voltage Probe	Differential Probe Set	Low Pass Filter Probe
Number and Color	One Black	One Red	One Gray	Red & Gray	One Red	Red & Gray	Red & Gray	One Black	Red & Gray	One Blue
Attenuation	10:1	10:1	10:1	100:1	10:1	10:1	10:1	1:1	200:1, 20:1	10:1
Band Width DC-MHz	40	200	200	200	100	100	75	12	20	4 kHz
Length [m]	1.2	1.2	1.2	1.2	1.2	1.2	2.5	1.2	1.5	2.5
Safety. EN 61010-2 CAT II Voltage [V]	1000	1000	1000	1000	1000	1000	1000	-	1000	-
Safety. EN 61010-2 CAT III Voltage [V]	600	600	600	600	600	600	600	300	600	600
ScopeMeter 190 Series	●	●	●	●	●	●	●	●	●	●
ScopeMeter 120 Series	●							●1)	●	●

PM9091/9092

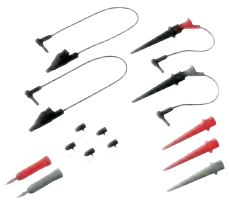
PM9081

PM9082

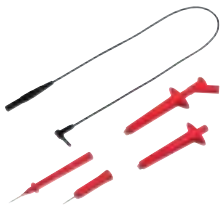
PM9093

	PM9091	PM9092	PM9081	PM9082	PM9093
Description	50 Ω BNC cable set (1Red, 1Gray, 1Black)	50 Ω BNC cable set (1Red, 1Gray, 1Black)	Dual Banana plug male to female BNC	Dual Banana jack male to female BNC	Male BNC to dual female BNC
Length	1.5m	0.5m			
CAT III Voltage [V]	300	300	300	300	300
ScopeMeter 190 Series	●	●	●	●	●
ScopeMeter 120 Series	●1)	●1)	●	●1)	●1)

1) Using BB 120



RS200



AS200-R

OC4USB

PM9080

PM9090

RS200	Probe Replacement Set for VPS200, VPS100, VPS40 Probes
AS200-R	Probe Accessory Set, Red for VPS200, VPS100, VPS40 Probes
AS200-G	Probe Accessory Set, Grey for VPS200, VPS100, VPS40 Probes
PM9080	Optical Interface Adapter Cable for serial port
OC4USB	Optical Interface Adapter Cable for USB Port
PM9090	Probe Pin Grabber Flexible Clip for VPS200, VPS100, VPS40 Probes
PM9094	Mini Testhook Set for PM8918 Probes
PAC91	Printer Adapter Cable

Battery Packs	
PM9086	NiCd Battery Pack for 90 Series
BP120	NiCd Battery Pack for 120 Series
BP130	NiMH Battery Pack for Fluke 124 (and Fluke 123 firmware V2)
BP190	NiMH Battery Pack for 190 + 430 Series

All accessories have a one year warranty

www.tti.co.uk
Tel: 01480 412451

Digital Thermometers

For troubleshooting systems where temperature is a critical symptom, our digital thermometers provide you with laboratory accuracy wherever you need it. We offer a choice of non-contact, laser-guided infrared thermometers for safely getting at hard-to-reach, electrically live or particularly hot targets, and contact thermometers with a full range of thermocouple probes.

60 Series Infrared Thermometers

FLUKE®

Fluke 68

Fluke 66

Fluke 63

Fluke 65

Fluke 61

Point, press and read temperature

The Fluke 60 Series non-contact thermometers are the ideal professional diagnostic tools for quick and accurate temperature measurements.
These handheld tools are ideal for measuring surface temperatures of rotating, hard-to-reach, electricity live or dangerously hot targets like electrical motors and – panels, and heating and ventilation systems.
The laser sighting system guides measurements to the right target and in less than a second, the large temperature display provides a readout of the surface temperature.

The 60 Series IR thermometers feature:

- Laser guided sighting system for easy targeting with 1% accuracy
- Up to 12 points datalogging with Min, max average functions
- Up to 50:1 optical resolution
- Choice between models with fixed or adjustable emissivity
- Backlit display for easy reading in the dark
- Temperatures up to 760°C

Features

	61	63	65	66	68
Form factor	Flat grip	Pistol grip	Flat grip	Pistol grip	Pistol grip
Temperature range	-18 to 275°C	-32 to 535°C	-40 to 500°C	-32 to 600°C	-32 to 760°C
Optical resolution	8:1	12:1	8:1	30:1	50:1
Laser beam for accurate targeting	●	●	●	●	●
Backlit LCD display	●	●	●	●	●
Use selectable °C or °F	●	●	●	●	●
MIN/MAX/AVG/DIF readings		MAX only	Min/Max/avg only	●	●
Datalogging			●	●	●
Hi/Lo Alarm				●	●
Adjustable emissivity				●	●

Specifications

	61	63	65	66	68
Range	-18 to 275°C	-32 to 535°C	-40 to 500°C	-32 to 600°C	-32 to 760°C
Response time	< 1 second	≤ 0.5 second	<1 second	≤ 0.5 second	≤ 0.5 second
Resolution	0.2°C	0.2°C	0.1°C to 200°C, 1°C over 200°C	0.1°C	0.1°C
Repeatability	± 2% of reading or ± 2°C*	± 0.5% or ≤ ± 1°C*	± 1% of reading or ± 1°C*	± 0.5% or ≤ ± 1°C*	± 0.5% or ≤ ± 1°C*
Accuracy: (assumes ambient operating temperature of 23°C)	For targets at: -18 to -1°C: ± 3°C -1 to 275°C: ± 2% of reading or ± 2°C*	For targets at: -32 to -26°C: ± 3°C -26 to -18°C: ± 2.5°C -18 to 23°C: ± 2°C 23°C -510°C: ± 1% of reading or ± 1°C* For targets above 510°C: ± 1.5% of reading	For targets at: -40 to 0°C: ± 5°C 0 to 100°C: ± 2°C 100 to 500°C: ± 2% of reading	For targets at: -32 to -26°C: ± 3°C -26 to -18°C: ± 2.5°C -18 to 23°C: ± 2°C For targets above 23°C: ± 1% of reading or ± 1°C*	For targets at: -32 to -26°C: ± 3°C -26 to -18°C: ± 2.5°C -18 to 23°C: ± 2°C For targets above 23°C: ± 1% of reading or ± 1°C*
Typical distance to target	Up to 1m	Up to 2 m	Up to 1m	5 m	8 m
Emissivity	Fixed at 0.95	Fixed at 0.95	Fixed at 0.95	Digitally adjustable from 0.1 to 1.0 by 0.01	Digitally adjustable from 0.1 to 1.0 by 0.01

* whichever is greater

Battery Life:
Fluke 66 and 68: 20 hours with laser and backlight on 50%
Fluke 65: 15 hours with laser and backlight activated
Fluke 63: 10 hours with laser and backlight activated
Fluke 61: 12 hours with laser and backlight activated

Size (HxWxD):
Fluke 63, 66 and 68: 200 mm x 160 mm x 55 mm
Fluke 65: 185 mm x 64 mm x 38 mm
Fluke 61: 184 mm x 45 mm x 38 mm

Weight:
Fluke 63, 66 and 68: 0.320 kg
Fluke 65: 0.284 kg
Fluke 61: 0.227 kg

One year warranty

Included Accessories

Fluke 61: 9V Battery
Fluke 63, 66 and 68: Hard carrying case, 9V batteries
Fluke 65: C50 Soft carrying case and 2 AA batteries

Ordering information

Fluke 61 Infrared Thermometer
Fluke 63 Infrared Thermometer
Fluke 65 Infrared Thermometer
Fluke 66 Infrared Thermometer
Fluke 68 Infrared Thermometer

Recommended Accessories

80PR-60
See page 69

H6
See page 71

50 Series II Thermometers

FLUKE®

Fluke 54 II

Fluke 51 II

Fluke 52 II

Fluke 53 II

Laboratory accuracy. Wherever you go.

The Fluke 50 Series II contact thermometers offer fast response and laboratory accuracy (0.05% + 0.3°C) in a rugged handheld test tool.

- Large backlit dual display shows any combination of T_1, T_2 (52 only), T_1–T_2 (52 only) plus MIN, MAX, or AVG
- Relative time clock on MIN, MAX, and AVG provides a time reference for major events
- Electronic Offset function allows compensation of thermocouple errors to maximize overall accuracy
- Readout in °C, °F, or Kelvin (K)
- Sleep mode increases battery life
- Battery door allows easy battery replacement without breaking the calibration seal

Additional features for the 53 and 54 Series II:

- Data Logging up to 500 points of data with user adjustable recording interval
- Real time clock captures the exact time of day when events occur
- Recall function allows logged data to be easily reviewed on the meter display
- IR communication port allows data to be exported to optional FlukeView® Temperature PC software

Features

	51 II	52 II	53 II	54 II
Thermocouple types	J,K,T,E	J,K,T,E	J,K,T,E,N,R,S	J,K,T,E,N,R,S
Number of inputs	Single	Dual	Single	Dual
Time stamp	Relative Time	Relative Time	Time of Day	Time of Day
Splash/Dust resistant	●	●	●	●
Dual display with backlight	●	●	●	●
Min/Max/Avg recording	●	●	●	●
(T_1–T_2) True differential		●		●
Data logging up to 500 points			●	●
IR data port for interface to PC			●	●
Compatible with optional FlukeView Software			●	●

Specifications

Temperature range:			
J-type	Thermocouples	-210°C to 1200°C	(-346°F to 2192°F)
K-type	Thermocouples	-200°C to 1372°C	(-328°F to 2501°F)
T-type	Thermocouples	-250°C to 400°C	(-418°F to 752°F)
E-type	Thermocouples	-150°C to 1000°C	(-238°F to 1832°F)
N-type**	Thermocouples	-200°C to 1300°C	(-328°F to 2372°F)
R** and S-type**	Thermocouples	0°C to 1767°C	(32°F to 3212°F)
Temperature accuracy			
Above –100°C (-148°F):			
J, K, T, E, and N-type**		± [0.05% + 0.3°C (0.5°F)]	
R** and S-type**		± [0.05% + 0.4°C (0.7°F)]	
Below –100°C (-148°F):			
J, K, E, and N-types		± [0.20% + 0.3°C (0.5°F)]	
T-type		± [0.50% + 0.3°C (0.5°F)]	

**Only the Fluke Models 53 and 54 Series II thermometers are capable of measuring N, R, and S-type thermocouples.

Battery life: 1000 hours typical, AA
Size (HxWxD): 173 x 86 x 38 mm
Weight: 0.4 kg
Three Year Warranty

Included Accessories

Impact absorbing holster
Two bead probe thermocouples 80PK-1 (54+52)
One bead probe thermocouple 80PK-1 (51+53)

Ordering Information

Fluke 51 II	Thermometer
Fluke 52 II	Thermometer
Fluke 53 II	Thermometer
Fluke 54 II	Thermometer
FVF-SC1	FlukeView Forms Software including interface cable

Recommended Accessories

C25
See page 70

80PK-26
See page 68

80PK-25
See page 68

FVF-SCI
See page 72

TPAK
See page 72

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Field Calibrators

You're responsible for testing and calibrating process control instrumentation. And you want your job done quickly and reliably. Count on the wide range of Fluke field calibration tools. You can maintain and calibrate virtually all types of sensors and transmitters. Whether you want all the required functionality in just one tool or a dedicated tool for temperature or pressure, or if you need intrinsically safe versions, the choice is yours.

TTi
www.tti.co.uk
Tel: 01480 412451

Field Calibrator Selection Guide

	Documenting Process Calibrators			Multifunction Process Calibrator	Temperature Calibrators			Pressure Calibrators		Loop Calibrators			ProcessMeters	
Model	**744**	**743B**	**741B**	**725**	**724**	**714**	**712**	**718/718Ex**	**717**	**715**	**707/707Ex**	**705**	**789**	**787**
Measure														
Voltage DC	300 V	300 V	300 V	30 V	30 V	75 mV				10 V	28 V	28 V	1000 V	1000 V
Voltage AC (true RMS)	300 V	300 V	300 V										1000 V	1000 V
Resistance	11 kΩ	11 kΩ	11 kΩ	3200 Ω	3200 Ω		3200 Ω						40 MΩ	40 MΩ
Current DC	110 mA	110 mA	110 mA	24 mA	24 mA			24 mA	24 mA	24 mA	24 mA	24 mA	30 mA, 1 A	30 mA, 1 A
Current AC													●	●
Frequency	50 kHz	50 kHz	50 kHz	10 kHz									20 kHz	20 kHz
Pressure	●[1]	●[1]	●[1]	●[1]				100G:7 bar[2]	100G:7 bar[2]					
								30G: 2 bar[2]	30G: 2 bar[2]					
Temperature: RTD types	8	8	8	7	7		7							
Temperature: TC types	11	11	11	10	10	9								
Source/Simulate														
Voltage DC	15 V	15 V	15 V	10 V	10 V	75 mV				10 V				
Resistance	11 kΩ	11 kΩ	11 kΩ	3200 Ω	3200 Ω		3200 Ω							
mA DC/% scale	22 mA	22 mA	22 mA	24 mA						24 mA	24 mA	24 mA	24 mA	24 mA
mA source; auto step, auto ramp	●	●	●	●							●	●	●	●
Frequency	50 kHz	50 kHz	50 kHz	10 kHz										
Temperature: RTD types	8	8	8	7	7		7							
Temperature: TC types	11	11	11	10	10	9								
Record														
Min/Max	●	●	●					●	●				●	●
Hold								●	●				●	●
As Found/As Left results	●	●	●											
Log data	●	●												
Upload data to PC	●	●												
Remote operation				●										
Features														
Loop supply	24 V	24 V	24 V	24 V	24 V			24 V/–	24 V	24 V	24 V	24 V	24 V	
Hart communication	●													
Integrated hand pressure pump								●						
Intrinsically safe (ATEX)								718Ex			707Ex			
NIST traceable certification	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Warranty in years	3	3	3	3	3	3	3	3/1	3	3	3/1	3	3	3
See catalog page	53	53	53	54	55	56	56	57	57	58	58	58	59	59

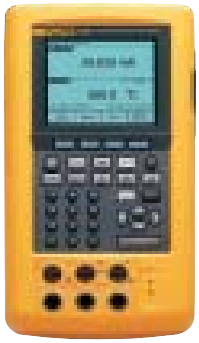
1 Fluke 700 pressure modules required
2 Either the internal sensor or a Fluke 700 pressure module may be used

FLUKE®

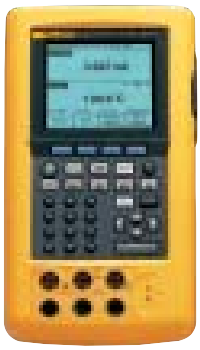
740 Series Documenting Process Calibrators

FLUKE®

Fluke 744



Fluke 743B



Fluke 741B

Calibrators as versatile as you are

The 740 series Documenting Process Calibrators are rugged, handheld tools for the calibration and troubleshooting of process control instrumentation. These calibrators:

- Calibrate temperature, pressure, voltage, current, resistance, and frequency
- Simultaneously measure and source
- Automatically capture calibration results
- Document procedures and results to meet ISO 9000, EPA, FDA, OSHA, and other government requirements
- Measure/simulate eleven types of thermocouples and eight RTDs
- Store up to 8,000 readings in data logging mode (743B +744 only)
- Protected against dirt, dust, and moisture; unaffected by vibration
- PC interface (743B +744 only)
- Operates in English, French, German, Italian, and Spanish
- One and two-year calibration cycles
- Four types of built-in automated calibration procedures; linear transmitter, square root devices, one and two-point limit switches

741B: A complete documenting calibrator

The 741B is the economical choice for plants that don't use PCs or that require traditional paper forms. It has storage capacity for a day's calibration and measurement data. When you're back at the shop, recall the data on-screen to fill out calibration forms.

743B: More memory, plus a PC interface and data logging

The 743B has all the capabilities of the 741B plus a PC interface that lets you download procedures, lists, and instructions created with software–or upload data for printing, archiving, and analysis. With its expanded memory, the 743B can hold a full week of calibrations and procedures.

744: Get HART-ability

The Fluke 744 offers all of the capabilities of the 743B, plus the ability to calibrate, maintain, and troubleshoot HART instrumentation with just one tool. This rugged, reliable tool offers:

- Integrated HART communication functions, permitting you to monitor, control, and calibrate HART instrumentation.
- NiMH battery with 3500 mA hour life and battery indicator.

Instrumentation Management Software

The Fluke 743B and 744 are compatible with Fluke 700SW DPC/TRACK software and with software from Cornerstone, Fisher-Rosemont, Honeywell, Yokogawa, Prime Technologies and On Time Support.

Included Accessories

Fluke 741B/743B: TL224 Industrial Test Leads (2 sets), AC220 Test Clips (2 sets), TP220 Test Probes (1 set), BP7217 Battery Pack, BC7217 Battery Charger, Instruction Manual, NIST Traceable calibration certificate and data, three-year warranty, serial port cable (743B only), DPC/TRACK Sample Version with free PC communication utility software (743B only).
Fluke 744: TL224 Industrial Test Leads (2 sets), AC220 Test Clips (2 sets), TP220 Test Probes (1 set), BP7235 NiMH Battery Pack, BC7217 Battery Charger, serial port cable, HART communications cable, DPC/TRACK Sample Version with free PC communication utility software, Instruction Manual, HART Users Manual, NIST Traceable calibration certificate and data.

Ordering Information

Fluke 741B	Documenting Process Calibrator
Fluke 743B	Documenting Process Calibrator
Fluke 744	Documenting Process Calibrator
700SW	DPC/Track Software

Specifications

(Check the Fluke web for detailed specifications)

Function	Measure	Sourcing
Voltage DC	0.025% reading + 0.005% full scale	0.01% output + 0.005% full scale
Current DC	0.01% reading + 0.015% full scale	0.01% output + 0.015% full scale
Resistance	0.05% reading + 50mΩ	0.01% output + 40mΩ
Frequency	0.05%	0.01%
Thermocouples	0.3°C	0.2°C
RTDs	0.3°C	0.1°C
Pressure	To 0.05% of full scale. See Pressure Module specifications.	

Operating temperature: -10° C to 50° C
Safety: CAT II 300V
Battery Life: Typically over eight hours
Internal Battery Pack: NiCd, 7.2V, 1700 mAh
Battery Replacement: Via snap-shut door without opening calibrator; no tools required
Weight: 1.4 kg
Size (HxWxD): 236 mm x 130 mm x 61 mm
Three Year Warranty

Recommended Accessories

C789
See page 70

TL220
See page 62

80PK-6
See page 68

80PK-25
See page 68

700P27
See page 60

725 Multifunction Process Calibrator

FLUKE®

Fluke 725

Simply powerful

725 Multifunction Process Calibrator
The Fluke 725 Multifunction Process Calibrator is a versatile, easy-to-use field calibrator. Use the measure and source functions to test and calibrate almost anything.

- Rugged, reliable design stands up to field use
- Easy to read measure/source screen lets you view input and output simultaneously
- Measure volts, mA, RTDs, thermocouples, frequency, and ohms to test sensors and transmitters
- Source/simulate volts, mA, thermocouples, RTDs, frequency, ohms, and pressure to calibrate transmitters
- Measure/source pressure using any of 29 Fluke 700Pxx Pressure Modules
- Source mA with simultaneous pressure measurement to conduct valve and I/P tests
- Support flow meter testing with frequency and CPM (counts per minute) functions
- Perform fast linearity tests with auto step and auto ramp features
- Power transmitters during test using loop supply with simultaneous mA measurement
- Store frequently-used test setups for later use
- Backlight lets you work in poor light
- Remote interface allows benchtop automated operations

Features

Simultaneous Function Capability	Channel A	Channel B
24.000 mA DC	M	M or S
24.000 mA DC with loop supply	M	
100.00 mV DC		M or S
30.000V DC Measure	M	
20.000V DC Measure 10.000V DC Source		M or S
15 to 3200 Ohms		M or S
Thermocouple J, K, T, E, R, S, B, L, U, N		M or S
RTD Ni120; Pt100 (392); Pt100 (JIS); Pt100, 200, 500, 1000 (385)		M or S
Pressure Eleven Engineering Units; use Fluke 700PXX Modules	M	M used as S
Frequency; Squarewave, 1 CPM to10 kHz; fixed amplitude 5V p-p		M or S

M = Measure S = Source/Simulate

Specifications

Function Measure or Source	Range	Resolution	Accuracy	Notes
Voltage	0 to 100 mV 0 to 10V (source) 0 to 30V (measure)	0.01 mV 0.001V 0.001V	0.02% Rdg + 2 LSD	Max load, 1 mA
mA	0 to 24	0.001 mA	0.02% Rdg + 2 LSD	Max load, 1000Ω
mV	-10.00 mV to +75.00 mV	0.01 mV	0.025% + of range + 1 LSD	
Resistance	0Ω to 3200Ω (measure) 15Ω to 3200Ω (source)	0.01Ω to 0.1Ω	0.10Ω to 1.0Ω	
Frequency	1 CPM to 10 kHz	5 digits	0.05% + 1 count	Squarewave
Loop Supply	24V DC	N/A	10%	
Thermocouples	J,K,T,E,L,N,U	0.1°C	to 0.7°C	
Thermocouples	B,R,S	1°C	to 1.4°C	
RTDs	Ni120 (672) Pt 100, 200, 500, 1000 (385) Pt 100 (3916) Pt 100 (3926)	0.1°C	to 0.2° C	

Maximum voltage: 30V
Storage temperature: -20°C to 71°C
Operating temperature: -10°C to 55°C
Relative humidity: 90% (10°C to 35°C); 75% (30°C to 40°C); 45% (40°C to 50°C); 35% (50°C to 55°C)
Shock: 30g, 11ms, half-sine shock (or 1meter drop test)
Vibration: Random, 2g, 5-500 Hz

Safety: CSA C22.2 No. 1010.1:1992
EMC: EN50082-1:1992 and EN55022: 1994 Class B
Size (HxWxD): 200 mm x 96 mm x 47 mm
Weight: 0.65 kg
Battery: Four AA alkaline batteries.
Battery life: 25 hours typical; battery door
Three Year Warranty

Included Accessories

TL75 Test Leads, AC72 Test Clips, one pair of stackable test leads, user's Manuals.

Ordering Information

Fluke 725 Multifunction Process Calibrator

Recommended Accessories

C125
See page 70

TL220
See page 62

80PK-27
See page 68

TPAK
See page 72

700P27
See page 60

724 Temperature Calibrator

Fluke 724

The temperature solution

The Fluke 724 Temperature Calibrator is a powerful yet easy-to-use calibrator. Use the measure and source functions to test and calibrate almost any temperature instrument.

- Easy to read dual display lets you view input and output simultaneously
- Measure RTDs, thermocouples, ohms, and volts to test sensors and transmitters
- Source/simulate thermocouples, RTDs, volts, and ohms to calibrate transmitters
- Perform fast linearity tests with 25% and 100% steps
- Execute remote tests with auto step and auto ramp
- Power transmitters during test using loop power supply with simultaneous mA measurement
- Store frequently-used test setups for later use

Features

Simultaneous Function Capability	Channel A	Channel B
24.000 mA DC	M	
24.000 mA DC with 24V loop supply	M	
100.00 mV DC		M or S
30.000V DC Measure	M	
20.000V DC Measure 10.000V DC Source		M or S
0 to 3200 Ohms		M or S
Thermocouple J, K, T, E, R, S, B, L, U, N		M or S
RTD Ni120; Pt100 (3926); Pt100 (JIS); Pt100, 200, 500, 1000 (385)		M or S

M = Measure S = Source/Simulate

Specifications

Function Measure or Source	Range	Resolution	Accuracy	Notes
Voltage	0 to 100 mV 0 to 10V (source) 0 to 30V (measure)	0.01 mV 0.001V 0.001V	0.02% Rdg + 2 LSD	Max load, 1 mA
mA (measure)	0 to 24	0.001 mA	0.02% Rdg + 2 LSD	Max load, 1000Ω
mV	-10.00 mV to +75.00 mV	0.01 mV	0.025% + of range + 1 LSD	
Resistance	0Ω to 3200Ω (measure) 15Ω to 3200Ω (source)	0.01Ω to 0.1Ω	0.10Ω to 1.0Ω	
Loop Supply	24V dc	N/A	10%	
Thermocouples	J,K,T,E,L,N,U	0.1°C	to 0.7°C	
Thermocouples	B,R,S	1°C	to 1.4°C	
RTDs	Ni120 (672) Pt 100, 200, 500, 1000 (385) Pt 100 (3916) Pt 100 (3926)	0.1°C	to 0.2° C	

Maximum voltage: 30V
Storage temperature: -20°C to 71°C
Operating temperature: -10°C to 55°C
Relative humidity: 90% (10°C to 35°C); 75% (30°C to 40°C); 45% (40°C to 50°C); 35% (50°C to 55°C)
Shock: 30g, 11ms, half-sine shock (or 1meter drop test)

Vibration: Random, 2g, 5-500 Hz
Safety: CSA C22.2 No. 1010.1:1992
EMC: EN50082-1:1992 and EN55022: 1994 Class B
Size (HxWxD): 200 mm x 96 mm x 47 mm
Weight: 0.65 kg
Battery: Four AA alkaline batteries
Battery life: 25 hours typical; battery door
Three Year Warranty

Included Accessories

TL75 Test Leads, AC72 Test Clips, one pair of stackable test leads.

Ordering Information

Fluke 724 Temperature Calibrator

Recommended Accessories

C25
See page 70

TL220
See page 62

80PK-25
See page 68

80PK-3A
See page 68

712/714 Temperature Calibrators

FLUKE®

Fluke 714

Fluke 712

The clear choice

The Fluke 710 Series Process Calibrators offer clear new choices in single-function calibrators. Whatever you want to measure – temperature, pressure or basic electrical parameters – you'll find one of these easy-to-carry handheld tools gives you exactly the functions you need. They combine the rugged, ready-for-action package of the proven Fluke 80 Series DMMs with the easy-to-use pushbutton operation of the multifunction Fluke 740 Series Documenting Process Calibrators. These calibrators are EMI tolerant, dust and splash resistant, and have a removable battery door for quick battery changes.

712 RTD Calibrator

- Measure temperature from RTD output
- Simulate RTD output
- Rosemount pulsed RTD transmitter compatible
- Operates with seven types of RTDs
- Measure additional RTDs using Ohms measurement function
- Simulate additional RTDs using Ohms source function
- °F or °C selectable
- Four shrouded banana jacks

714 Thermocouple Calibrator

- Measure temperature from TC output
- Simulate TC output
- Operable with nine types of thermocouples
- Calibrate linear TC transmitter with mV source function
- Selectable °F or °C
- Thermocouple mini-jack termination
- Available as accessories; Fluke 700 TC1 and TC2 Thermocouple Mini-plug Kits

Specifications

Model	Function	Range	Resolution	Accuracy	Notes
Fluke 712	Measure/simulate RTD	-200 to 800°C (Pt 100)	0.1°C, 0.1°F	0.33°C, 0.6°F (Pt 100)	Pt; 100 200 500 1000 (385); Pt 100 (3926); Pt 100 (3916) JIS; Ni 120 (672)
	Measure/simulate Resistance	15 Ω to 3200 Ω	0.1 Ω	0.1 Ω to 1 Ω	
Fluke 714	Measure/ simulate Thermocouple	-200 to 1800°C, depending on type (K, -200 to 1370°C)	0.1°C or °F (1°C or °F; BRS)	0.3°C to 10 µV	9 TC types: J K T E R S B per NIST 175 and ITS-90, L U per DIN 43710 and IPTS-68
	Measure/ simulate mV	-10 to 75 mV	0.01 mV	0.025% + 1 count	

General specifications for Fluke 712/714/715/717/718/718Ex

Maximum voltage: 30 V
Non-operating temperature: -40°C to 60°C
Operating temperature: -10°C to 55°C
Relative humidity: 95% (10°C to 30°C); 75% (30°C to 40°C); 45% (40°C to 50°C); 35% (50°C to 55°C)
Operating altitude: 3,000m max
Shock: 1m drop test
Vibration: Random, 2g, 5-500 Hz
Safety: CSA C22.2 No. 1010.1:1992
EMC: EN50082-1:1992 and EN55022: 1994 Class B
712/714:
Size (HxWxD): 201mm x 98 mm x 52 mm
Weight: 0.6kg
Battery: 9V alkaline
Battery Life: 4 to 20 hours, typical, depending on functions used
Three Year Warranty

Included Accessories

Yellow Holster (H80M excl. TPAK), TL75 Test Leads and AC72 Alligator Clips (excluding model 714), single 9V alkaline battery and Instruction Sheet (14 languages)

Ordering Information

Fluke 712 RTD Calibrator
Fluke 714 Thermocouple Calibrator

Recommended Accessories

C25
See page 70

C550
See page 70

TL75 (712)
See page 62

TL220 (714)
See page 62

80PK-24 (714)
See page 68

717/718/718Ex Pressure Calibrators

FLUKE®

Fluke 718

Fluke 718Ex

Fluke 717

Pump up the pressure

717 30G and 100G Pressure Calibrator

- Measure pressure, 0.05% of full scale with internal sensor
  - 1/8 NPT pressure fitting
  - Compatible with non-corrosive gasses and liquids
- Pressure measurement to 700 bar using any of the Fluke-700Pxx Pressure Modules
- Wide range of selectable measurement units for pressure
- Current measurement with 0.025% accuracy and 0.001mA resolution
- Simultaneous pressure and current measurement for easy P/I or I/P testing
- 24 volt loop power supply
- Zero, Min-Max, Hold and Damping functions
- Pressure switch test captures set, reset and deadband values

718 30G and 100G Pressure Calibrator

- Same features as Fluke 717 plus
- Built-in pressure/vacuum hand pump with vernier and bleed valve

718Ex 30G and 100G Intrinsically Safe Pressure Calibrator

- Same features as Fluke 718 (excl. loop supply)
- For use in explosion endangered areas
- ATEX certified (Ex II 1G EEx ia IIC T4)
- Compatible with eight intrinsically safe pressure modules (see page 60)

Specifications

	Function	Range	Resolution	Accuracy	Notes
30G models	Measure Pressure[1] (internal sensor) Over pressure 3xFS	Gage 0–2 bar Vacuum –830 mbar	0.0001 bar	0.05% Full Scale	Gasses/liquids[1] (non-corrosive) Zero,Min,Max, Hold,Damp
100G models	Measure Pressure[1] (internal sensor) Over pressure 2xFS	Gage 0–7 bar Vacuum –830 mbar	0.001 bar	0.05% Full Scale	Gasses/liquids[1] (non-corrosive) Zero,Min,Max, Hold,Damp
All models	Measure Pressure[1] (with Pressure Modules) Over pressure per pressure module specs	29 Pressure Modules, 2,5 mbar to 700 bar	To 0.001 mbar per Pressure Module specs	To 0.025% of full span, per Pressure Module specs	Media compatibility per Pressure Module specs Zero, Min, Max, Hold, Damp
718-718Ex	Source Pressure, built-in pump	-830 mbar to full scale	N/A	N/A	
All models	Measure mA	0 to 24 mA	0.001 mA	0.025% + 1 count	
717/718	Loop Supply	24 V DC	N/A	± 10%	Drive; 20 mA into 1000 Ω for battery >6.8V; 700 Ω for battery 5.8 to 6.8V

1 Supported Pressure Units; psi, in. H20(4°C), in. H20(20°C), cm H20(4°C), cm H20(20°C), bar mBar, kPa, inHg, mmHg, kg/cm2
2 Fluke 718: non-corrosive gases only

717
For general specifications see page 56
Size (HxWxD): 201 mm x 98 mm x 52 mm
Weight: 0.6 kg
Warranty: Three years

718/718Ex
For general specifications see page 56
Size (HxWxD): 216 mm x 94 mm x 66 mm
Weight: 0.992 kg
Warranty 718: Three years
Warranty 718Ex: One year

Included Accessories

Fluke 717: Yellow Holster (H80M excl. TPAK), TL75 Test Leads and AC72 Alligator Clips, Single 9V alkaline battery (two 9V batteries in 718), Instructions.
717/718Ex: 718: Yellow Holster, 718Ex: Red Ex Holster, TL75 Test Leads end and AC72 Alligator Clips, 700ILF In-Line Filter, two 9V batteries, user manual on CD-ROM.

Ordering Information

Fluke 717	30G Pressure Calibrator
Fluke 717	100G Pressure Calibrator
Fluke 718	30G Pressure Calibrator
Fluke 718	100G Pressure Calibrator
Fluke 718Ex	30G Intrinsically Safe Pressure Calibrator
Fluke 718Ex	100G Intrinsically Safe Pressure Calibrator

Recommended Accessories

C43 (718)
See page 70

C125 (717)
See page 70

80PK-27
See page 68

700P27
See page 60

700LTP
See page 60

705/707/707Ex/715 Loop Calibrators

FLUKE®

Fluke 705

Fluke 715

Fluke 707

Fluke 707Ex

4-20 mA, source, measure, simulate

705 Loop Calibrator
- Simultaneous mA and %
- mA accuracy of 0.02%
- Measure, source and simulate mA
- Push button 25% steps for fast, easy linearity checks
- "Span Check" for fast confirmation of zero and span
- Selectable slow ramp, fast ramp, and step function
- 24 volt internal loop supply
- 0 – 20 mA or 4 – 20 mA default start up modes

707 Loop Calibrator
- Features of the Fluke 705
- "Quick Click" detented rotary knob for one handed operation
- Higher accuracy: 0.015%
- Mains Voltage Input protection
- 250 Ohm loop resistance for with Hart instrumentation

715 Volt/mA Calibrator
- Measure loop current (0–20 mA, 4–20 mA) signals with 0.015% accuracy and 0.001 mA resolution
- Measure voltage output process signals from PLCs, transmitters
- Source or simulate 24 mA loop current
- Source voltage to 100 mV or 10V
- 24V loop supply with simultaneous current measurement

707Ex Intrinsically Safe Loop Calibrator
- Same features as Fluke 707
- For use in explosion endangered areas
- ATEX certified (Ex II 2 G Eex ia IIC T4)

Specifications

Functions Voltage measurement	705/707/707 Ex	715
Range	0–28 V DC	0–100 mV, 0–10 V
Resolution	1 mV	10 µV 1 mV
Accuracy	705: 0.025% Rdg + 1 LSD 707/707Ex: 0.015% Rdg + 2 LSD	0.02% Rdg + 2 LSD
Current measurement		
Range	0–24 mA	0–24 mA
Resolution	0.001 mA	0.001 mA
Accuracy	705: 0.025% Rdg + 2 LSD 707/707Ex: 0.015% Rdg + 2 LSD	0.015%
Current sourcing		
Range	0–20 mA or 4–20 mA[1]	0–20 mA or 4–20 mA[1]
Accuracy	705: 0.025% Rdg + 2 LSD 707/707Ex: 0.015% Rdg + 2 LSD	0.015% + 2 LSD
Drive capability	705: 1000 Ω @ 24 mA 707: 1200 Ω @ 24 mA 707Ex: 700 Ω @ 20 mA	1000 Ω @ 24 mA
Loop power while measuring mA	24 V	24 V
Voltage sourcing	N/A	0–100 mV or 0–10 V
Display current and % of span	Yes	mA or %
Auto step, auto ramp	Yes	No
Span Check	Yes	No

[1] will over-range to 24 mA

Fluke 705, 707, 707Ex
Maximum voltage: 30 V (28 V – 707Ex)
Non-operating temperature: -40 to 60°C
Operating temperature: -10 to 55°C
Relative humidity: 0 to 90% (0 to 35°C); 0 to 70% (35 to 55 °C)
Operating altitude: 3,000 meters max.
Shock and vibration: Per MIL-T-28800 for a Class 2 Instrument
Safety: CSA C22.2 No. 1010.1: 1992
EMC: EN50082-1:1992 and EN55022: 1994 Class B
Size (HxWxD): 164 mm x 75 mm x 47 mm;
Weight: 0.35 kg
Battery: One 9 V alkaline
Battery life: 18 hours typical, at 12 mA
Warranty: Three years (one year, 707Ex)

715
For general specifications see page 56
Size (HxWxD): 201 mm x 98 mm x 52 mm
Weight: 0.6 kg
Battery: One 9V alkaline
Battery life: 4 to 20 hours
Warranty: Three years

Included Accessories
Fluke 705/707: C10 Yellow Holster, TL75 Test Leads, AC72 Alligator Clips, Single 9V alkaline battery, Instruction Sheet
Fluke 707Ex: Red Ex-holster, Fluke TL75 Test Leads, AC72 Alligator Clips, Single 9V alkaline battery, Instruction Sheet
Fluke 715: Yellow Holster (H80M excl. TPAK), TL75 Test Leads and AC72 Alligator Clips, Single 9V alkaline battery, Instruction Sheet

Ordering Information
Fluke 705	Loop Calibrator
Fluke 707	Loop Calibrator
Fluke 707Ex	Intrinsically Safe Loop Calibrator
Fluke 715	Volt/mA Calibrator

Recommended Accessories

C12A (705/707)
See page 70

C25 (715)
See page 70

TL220
See page 62

TL28A
See page 65

TPAK (715)
See page 72

787/789 ProcessMeters

Fluke 787

Fluke 789

Double your power

The Fluke 787 and 789 ProcessMeters combine a Digital Multimeter and a Loop Calibrator in one rugged handheld tool, giving process technicians double the power.
The Fluke 789 has a built-in 24 V loop supply which reduces the need for taking a separate power supply when doing offline transmitter testing. The IR communication port of the Fluke 789 allows data to be logged to optional FlukeView Software for graphical analysis and reporting.

1000V CAT III

LISTED UL · CSA · TÜV PRODUCT SERVICE · GS · True RMS

Features

	787	789
DMM and Loop Calibrator in one tool	●	●
Precision 1000 V, 440 mA True RMS Digital Multimeter	●	●
DC current source and Loop Calibrator	●	●
24 V Loop power supply		●
Min/Max / Average / Hold / Relative Modes	●	●
Diode Test and Continuity Beeper	●	●
Manual Step (100%, 25%, Coarse, Fine) plus Auto Step and Auto Ramp	●	●
Simultaneous mA and % of scale read-out	●	●
Externally accessible battery / fuses	●/-	●/●
HART mode setting with loop power and a built-in 250 Ω resistor		●
0% and 100% buttons to toggle between 4 and 20 mA sourcing for a quick span check		●
Infrared I/O serial port		●

Specifications

	787		789	
Voltage measurements				
Range	0–1000 V AC or DC		0–1000 V AC or DC	
Resolution	0.1 mV to 1.0 V		0.1 mV to 1.0 V	
Accuracy	0.1% Rdg+1 LSD (V DC)		0.1% Rdg+1 LSD (V DC)	
Current measurement				
Range	0–1 A	0–30 mA	0–1 A	0–30 mA
Resolution	1 mA	0.001 mA	1 mA	0.001 mA
Accuracy	0.2%+2 LSD	0.05%+2 LSD	0.2%+2 LSD	0.05%+2 LSD
Current Sourcing				
Range	0–20 mA or 4–24 mA		0–20 mA or 4–24 mA	
Accuracy	0.05% of span		0.05% of span	
Other specifications				
Max drive capability	500 Ω		1200 Ω	
Loop power	N/A		24 V	
Resistance measurement	To 40 MΩ, 0.2%+1 LSD		To 40 MΩ, 0.2%+1 LSD	
Frequency	To 19.999 kHz, 0.005%+1 LSD		To 19.999 kHz, 0.005%+ LSD	
Continuity	Beeps for resistance < 100 Ω		Beeps for resistance < 100 Ω	
Span Check	No		Yes	

Maximum voltage: 1000 V
Non-operating temperature: -40 to 60°C
Operating temperature: -20 to 55°C
Shock: one meter drop test
Vibration: Random, 2 g, 5–500 Hz

787
Size (HxWxD): 201 mm x 98 mm x 52 mm
Weight: 0.642 kg
Battery: One 9 V alkaline
Battery life: 12 to 50 hours typical
Warranty: Three years

789
Size (HxWxD): 203 mm x 100 mm x 50 mm
Weight: 0.6 kg
Battery: Four AA alkaline batteries
Battery life: 14 to 140 hours typical
Warranty: Three years

Included Accessories

787: Yellow Holster (H80M excl. TPAK), TL75 Hard Point Test Lead Set plus AC72 Alligator Clips, one 9V battery, user manual
789: TL71 Test Lead Set plus AC72 Alligator Clips, four 9V AA alkaline batteries, user manual and quick reference guide.

Ordering Information

Fluke 787 ProcessMeter
Fluke 789 ProcessMeter
FVF-SC2 FlukeView Forms Software including interface cable

Recommended Accessories

C125
See page 70

TL220
See page 62

80T-150U
See page 68

i410
See page 67

Field Calibrator Accessories

Fluke 700 Series Pressure Modules

- Ranges from 2.5 mbar to 700 bar.
- Gage, differential, dual (compound), absolute and vacuum modules
- Very high accuracy: up to 0.025% FS
- Full-accuracy performance for 0°C to 50°C
- Pressure readings update twice per second, and may be displayed in up to 11 different units
- Compatible with Fluke 717, 718, 725 and 74x series.
- Rugged cases protect the modules from harsh environments
- All modules include NIST traceable certificate and test data
- ATEX certified Ex versions available (Ex II 1 Eex ia IIB T4)

Model		Range (approx.)	Resolution uncertainty (23 ± 3°C) (FS)	Reference	High side media	Low side media	Fitting material	Max overpressure[2]
Differential								
700P00		2.5 mbar	0.001 mbar	0.3 %	Dry [1]	Dry	316 SS	30x
700P01/700P01Ex	Ex	25 mbar	0.01 mbar	0.2 %	Dry	Dry	316 SS	3x
700P02		70 mbar	0.007 mbar	0.15 %	Dry	Dry	316 SS	3x
700P22		70 mbar	0.007 mbar	0.1 %	316 SS	Dry	316 SS	3x
700P03		340 mbar	0.01 mbar	0.05 %	Dry	Dry	316 SS	3x
700P23		340 mbar	0.01 mbar	0.025 %	316 SS	Dry	316 SS	3x
700P04		1000 mbar	0.1 mbar	0.025 %	Dry	Dry	316 SS	3x
700P24/700P24Ex	Ex	1001 mbar	0.1 mbar	0.025 %	316 SS	Dry	316 SS	3x
Gage								
700P05/700P05Ex	Ex	2 bar	0.1 mbar	0.025 %	316 SS	N/A	316 SS	3x
700P06/700P06Ex	Ex	7 bar	0.7 mbar	0.025 %	316 SS	N/A	316 SS	3x
700P27/700P27Ex	Ex	20 bar	1 mbar	0.025 %	316 SS	N/A	316 SS	3x
700P07		34 bar	1 mbar	0.025 %	316 SS	N/A	316 SS	3x
700P08		70 bar	7 mbar	0.025 %	316 SS	N/A	316 SS	3x
700P09/700P09Ex	Ex	100 bar	10 mbar	0.025 %	316 SS	N/A	316 SS	2x
Absolute								
700PA3		340 mbar	0.01 mbar	0.05 %	316 SS	N/A	316 SS	3x
700PA4/700PA4Ex	Ex	1000 mbar	0.1 mbar	0.05 %	316 SS	N/A	316 SS	3x
700PA5		2 bar	0.1 mbar	0.05 %	316 SS	N/A	316 SS	3x
700PA6		7 bar	0.7 mbar	0.05 %	316 SS	N/A	316 SS	3x
Vacuum								
700PV3		-340 mbar	0.01 mbar	0.04 %	316 SS	Dry	316 SS	3x
700PV4		-1000 mbar	0.1 mbar	0.04 %	316 SS	Dry	316 SS	3x
Dual								
700PD2		± 70 mbar	0.007 mbar	0.15 %	316 SS	Dry	316 SS	3x
700PD3		± 340 mbar	0.01 mbar	0.04 %	316 SS	Dry	316 SS	3x
700PD4		±1000 mbar	0.1 mbar	0.025 %	316 SS	Dry	316 SS	3x
700PD5		-1000/+2000 mbar	0.1 mbar	0.025 %	316 SS	N/A	316 SS	3x
700PD6		-1000 mbar/+6.9 bar	1 mbar	0.025 %	316 SS	N/A	316 SS	3x
700PD7		-1000 mbar/+13.8 bar	1 mbar	0.04 %	316 SS	N/A	316 SS	3x
High								
700P29/700P29Ex	Ex	200 bar	0.01 bar	0.05 %	C276	N/A	C276	2x
700P30		340 bar	0.01 bar	0.05 %	C276	N/A	C276	2x
700P31		700 bar	0.07 bar	0.05 %	C276	N/A	C276	1.5x

1) "Dry" indicates dry air or non-corrosive gas as compatible media. "316 S S" indicates media compatible with Type 316 Stainless Steel. "C276" indicates media compatible with Hastelloy C276.
2) Maximum overpressure specification includes common mode pressure.

Other accessories

Fluke 700LTP Fluke 700PTP

700LTP Low-pressure Test Pump
- For low pressure applications
- Vacuum to – 0.85 bar
- Pressure to 2 bar
- With fine-control, adjustable relief valve and slow bleed capability

700PTP Pneumatic Test Pump
- Handheld pressure pump
- Vacuum to -0.8 bar
- Pressure to 25 bar

700HTP Hydraulic Test Pump
- Pressure to 700 bar

700PRV Pressure Relief Valve Kit

700HTH Hydraulic Test Hose

700ILF In-Line Filter for the Fluke 718

700PCK Pressure Module Calibration Kit

BP7235 NiMH Battery Pack

BE9005 Battery Eliminator

www.tti.co.uk
Tel: 01480 412451

General Accessories

The best test tools deserve accessories designed and manufactured to the same high quality and safety standards. So we also provide a comprehensive range of test leads, probes and clips, current clamps, temperature accessories and dedicated electronic and automotive accessories. And to protect your valuable instrument, choose a rugged Fluke tailor-made holster or case.

Industrial Test Leads, Probes & Clips

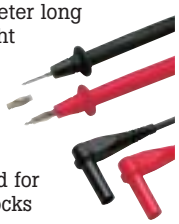
FLUKE®

Test Leads

TL71 Premium Test Lead Set
- One pair (red, black) comfort grip probes with silicone insulated, right-angle test leads
- Recommended for µV measurements
- CAT IV 600 V, CAT III 1000 V, 10 A rating. UL listed

TL75 Hard Point™ Test Lead Set
- One pair (red, black) comfort grip probes with PVC insulated, test leads with right-angle shrouded banana plugs
- Recommended for general purpose measurements
- CAT IV 600 V, CAT III 1000 V, 10 A rating. UL listed

TL76 All-in-one Test Lead Set
- One pair (red, black) 1.5 meter long silicone test leads with right angle shrouded banana plug
- Lantern tip (removable) for use with European wall sockets (4 mm Ø)
- Lantern tip can be removed for easy access to terminal blocks (2 mm Ø)
- Removable, insulated IC caps allow probing on closely spaced leads and compliance with GS38.
- Cat IV 600 V, CAT III 1000 V, 10 A rating, UL listed



Modular Test Leads

TL221 SureGrip™ Extension Lead Set
- One pair (red, black) of silicone insulated leads with straight connectors on both ends
- Reinforced strain relief
- Includes one pair (red, black) of female couplers
- Extends test leads by 1.5 m
- 600 V CAT IV, 1000 V CAT III, 10 A rating. UL listed

TL222 SureGrip™ Silicone Test Lead Set
- DMM test leads (red, black) with safety shrouded, standard diameter banana plugs
- Right angle connector on both ends
- Reinforced strain relief
- 1.5 meter silicone-insulated wire resists heat & cold
- CAT IV 600 V, CAT III 1000 V, 10 A rating. UL listed

TL224 SureGrip™ Silicone Test Lead Set
- DMM test leads (red, black) with safety shrouded, standard diameter banana plugs
- Right angle connector on one end and straight connector on the other
- Reinforced strain relief
- 1.5 meter silicone-insulated wire resists heat & cold
- CAT IV 600 V, CAT III 1000 V, 10 A rating. UL listed

TL27 Heavy Duty Test Lead Set
- DMM test leads (red, black) with safety shrouded, standard diameter banana plugs
- Heavy duty EPDM insulation
- Length 1.5 m
- CAT III 1000 V, 10 A rating. UL listed

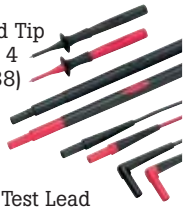
Kits

TL220 SureGrip™ Industrial Test Lead Kit
Handy all-in-one kit that includes:
- AC220 SureGrip™ Alligator Clip Set
- TP220 SureGrip™ Test Probe Set
- TL222 SureGrip™ Silicone Test Lead Set (right to right)

TL223 SureGrip™ Electrical Test Lead Kit
Handy all-in-one kit that includes:
- AC220 SureGrip™ Alligator Clip Set
- TP1 Slim-Reach™ Test Probes (flat bladed)
- TL224 SureGrip™ Silicone Test Lead Set (straight to right)

TL238 SureGrip™ High Energy Test Lead Kit
New

Kit includes:
- TP238 SureGrip™ Insulated Tip Test Probes with less than 4 mm of exposed metal (GS38) with flexible removable finger banner
- TP280 20 cm Test Probe Extenders
- TL224 SureGrip™ Silicone Test Lead Set



TLK-220 EUR SureGrip™ Accessory Kit
Handy all-in-one kit that includes:
- AC220 SureGrip™ Alligator Clip Set
- AC285 SureGrip™ Large Jaw Alligator Clip Set
- TP74 Slim Reach Test Probe Set (4 mm)
- TL224 SureGrip™ Silicone Test Lead Set
- Large zippered soft case with moveable divider

TLK-225 SureGrip™ Master Accessory Kit
Kit includes all the SureGrip™ leads and probes in a handy roll-up pouch:
- AC220 SureGrip™ Alligator Clip Set
- AC280 SureGrip™ Hook Clip Set
- AC283 SureGrip™ Pincer Clip Set
- AC285 SureGrip™ Large Jaw Alligator Clip Set
- TP220 SureGrip™ Test Probe Set
- TL224 SureGrip™ Silicone Test Lead Set
- 6-Pocket Storage Pouch

SureGrip™ accessories are designed to improve steadiness in slippery hands. Rubber overmolded surfaces and finger-hugging curves give the user a comfortable, reliable grip on the accessory so they can focus on making an accurate measurement.

Industrial Test Leads, Probes & Clips

FLUKE®

Kits

ACC-T5-KIT Accessory Kit for use with T5

This kit completes the offering of a T5 with add-on probes and carrying case.
- TP220 SureGrip™ Test Probe Set
- AC285 SureGrip™ Large Jaw Alligator Clip Set
- C33 Soft Meter Case

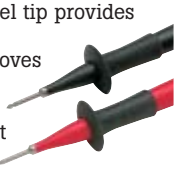
L215 SureGrip™ Kit with Probe Light and Extender

- L200 Probe Light
- TP280 20 cm Test Probe Extenders
- TP220 SureGrip Test Probes
- TL224 SureGrip Silicon Test Lead Set
- Foldable soft pouch with six pockets and hook-and-loop

Modular Test Probes

(for use with Modular Test Leads)

TP220 SureGrip™ Test Probe Set



- One pair (red, black) of Industrial test probes
- Sharp, 12 mm stainless steel tip provides reliable contact
- Flexible finger barrier improves grip
- Recommended for use with TL222 and TL224 test leads
- CAT IV 600 V; CAT III 1000 V, 10 A rating. UL listed

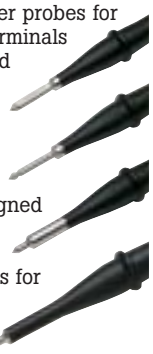
TP74 Lantern Tip Test Probe Set

- One pair (red, black)
- Tips include banana-style spring contacts with nickel-plated brass ends
- CAT III 1000 V, 10 A rating. UL listed

Modular Test Probes

(for use with Modular Test Leads)

TP1, TP4, TP38 SlimReach Test Probe Sets



- One pair (red, black) of slender probes for closely spaced or recessed terminals
- **TP1:** Flat blade design to hold securely in blade type wall sockets
- **TP2:** 2 mm diameter tip for electronics work. Also compatible with AC72.
- **TP4:** 4 mm diameter tip designed to fit into IEC wall outlets
- **TP38:** Insulated probe tip (designed to meet GS38 specs for United Kingdom).
- CAT IV 600 V, CAT III 1000 V, 10 A rating, UL listed

TP80 Electronic Test Probe Set

Recommended for use with TL222 and TL224
- One pair (red, black)
- IC insulated cap prevents shortening of IC legs for probing high density components or boards
- CAT III 1000 V, 10 A rating. UL listed

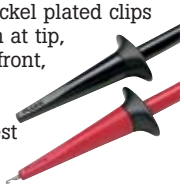
Modular Clips

(for use with Modular Test Leads)

AC220 SureGrip™ Alligator Clip Set

- One pair (red, black) of small, insulated, nickel plated jaws
- Blunt tip grabs round screw heads up to 9.5 mm
- Recommended for use with TL222 and TL224 test leads
- CAT IV 600 V, CAT III 1000 V, 10 A rating. UL listed

AC280 SureGrip™ Hook Clip Set



- One pair (red, black) of nickel plated clips
- Profile narrows to 5.6 mm at tip, hook opening 6.4 mm at front, 2 mm at base
- Recommended for use with TL222 and TL224 test leads
- CAT IV 600 V, CAT III 1000 V, 3 A rating. UL listed

AC283 SureGrip™ Pincer Clip Set

- One pair (red, black) of nickel plated pincers open to 5 mm
- 11.4 cm flexible insulated shaft
- Recommended for use with TL222 and TL224 test leads
- CAT IV 600 V, CAT III 1000 V, 1 A rating. UL listed

Modular Clips

(for use with Modular Test Leads)

AC285 SureGrip™ Large Jaw Alligator Clip Set

- One pair (red, black) of large alligator clips with nickel-plated steel jaws
- Multi-purpose tooth pattern grips anything from fine gauge wire to a 20 mm bolt
- Recommended for use with TL222 and TL224 test leads
- CAT IV 600 V; CAT III 1000 V, 10 A rating. UL listed

AC87 Heavy Duty Bus Bar Clip Set

- One pair (red, black) of flat, right angle design for connecting to bus bars
- Adjustable collar provides 2 ranges of jaw openings up to 30 mm
- CAT III 600 V, 5 A rating. UL listed

AC89 Heavy Duty Insulation Piercing Test Clip

- Single probe pierces 0.25 to 1.5 mm insulated wire
- Small pin allows self-healing of the insulation
- CAT IV 600V, CAT III 1000 V, 5 A rating. UL listed

Push-on Clip

(for use with TL71 and TL75 Test Lead Sets)

AC72 Alligator Clip Set

- Slide-on alligator clips (red, black) for TL71/TL75
- Jaws provide 8 mm opening
- CAT IV 600 V, CAT III 1000 V, 10 A rating. UL listed

High Voltage Probes

80K-6 and 80K-40

A high voltage probe that allows a multimeter to measure up to 6,000V or 40,000V respectively.
Intended for low energy applications only

All accessories have a one year warranty

Electronic Test Leads, Probes & Clips

FLUKE®

Test Leads

TL910 Electronic Test Lead Set
- Very small 1 mm tips to access hard to reach test points
- Probe tip length up to 100 mm, test lead length: 1 m
- Included: 3 sets of spring loaded gold tips and 2 sets of stainless steel tips
- CAT IV 600 V, CAT III 1000 V, 3 A rating

TP912 Replacement Tips for TL910
- Replacement tips for TL910
- Five sets of gold plated and stainless steel tips

TL40 Retractable Tip Test Lead Set
- One pair (red, black) of test leads with sharp needle point tips adjustable to desired length from 0 to 76 mm
- Extra hard probe tips to provide long service life
- Flexible silicone insulated test leads
- CAT II 150 V, 3 A rating, UL listed

TL940 Mini-Hook Test Lead Set
- 1 pair (red, black) of test leads with multi-stacking 4 mm banana plugs and mini-hooks
- Mini-hooks attach to component leads up to 1.5 mm diameter
- 90 cm long PVC insulated leads
- 30 V rms or 60 V DC, 15 A

TL950 Mini-Pincer Test Lead Set
- 1 pair (red, black) of test leads with multi-stacking 4 mm banana plugs and mini-pincers
- Mini-pincers open to 2.3 mm
- 90 cm long PVC insulated leads
- 30 V rms or 60 V DC, 15 A

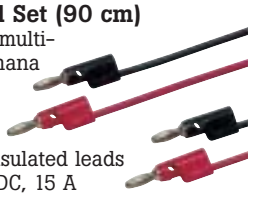
Test Leads

TL960 Micro-Hook Test Lead Set
- 1 pair (red, black) of test leads with multi-stacking 4 mm banana plugs and micro-hooks
- Micro-hooks attach to component leads up to 1 mm diameter
- 90 cm long PVC insulated leads
- 30 V rms or 60 V DC, 15 A

Patch Cords

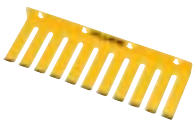
TL930 Patch Cord Set (60 cm)
- 1 pair (red, black) multi-stacking 4 mm banana plug patch cords
- Nickel-plated banana plugs
- 61 cm long PVC insulated leads
- 30 V rms or 60 V DC, 15 A

TL932 Patch Cord Set (90 cm)
- 1 pair (red, black) multi-stacking 4 mm banana plug patch cords
- Nickel-plated banana plugs
- 90 cm long PVC insulated leads
- 30 V rms or 60 V DC, 15 A



TL935 Patch Cord Kit (60, 90, 120 cm)
- 3 sets (red and black pairs) of multi-stacking 4 mm banana plug patch cords
- Nickel-plated banana plugs
- 60 cm, 90 cm, 120 cm long PVC insulated leads
- 30 V rms or 60 V DC, 15 A

H900 Test Lead Holder
- Heavy duty construction with mounting holes
- Holder has 10 slots for wires up to 8 mm in diameter
- Over-all dimensions: 27.9 cm L x 8.9 cm W x 3.2 cm H



Kits

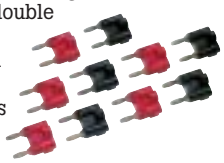
TP920 Test Probe Adapter Kit
- Set of push-on adapters for TL71 and TL75 test probes
- IC test adapters, extended probe tips, medium alligator clips (max.opening 7.6 mm)
- CAT II 300 V, 5 A rating

TL970 Hook and Pincer Kit
- Handy all-in-one kit that includes 3 Test Lead Sets:
- TL940 Mini-Hook Test Lead Set
- TL950 Mini-Pincer Test Lead Set
- TL960 Micro-Hook Test Lead Set

TL80A Basic Electronic Test Lead Kit
- One pair (red, black) each 1 meter long silicone test lead set, alligator clip and probe tip extender.
- C75 soft carrying case
- CAT II 300 V. UL listed

TL81A Deluxe Electronic Test Lead Kit
- Includes components of TL80, plus one pair (red, black) each modular 1 meter long silicone test lead, test probe, hook-style and pinch style clip, alligator clip, IC probe tip adapter and spade lugs
- Quadfold soft carrying case
- CAT II 300 V. UL listed

BP980 Double Banana Plug Kit
- 5 pair (red, black) of double 4 mm banana plugs
- Each plug has 3.1 mm holes for mounting wires and components
- Brass plugs/jack, beryllium copper springs
- 30 V rms or 60 V DC, 15 A



Automotive Accessories

FLUKE®

Piercing Clips

TP81 and TP82 Insulation Piercing Clip Set

- Banana jack accepts all DMM and banana jack leads
- Available for 4 mm input, modular connection with TP81 or available as a 2 mm input to slip onto probe tips with the TP82
- Tested to 60 V DC

TP84 Oxygen Sensor Insulation Piercing Clip

- Banana jack accepts all DMM and banana jack leads (4 mm)
- Tested to 60 V DC

Probe Pins

TP88 Rigid Back Probe Pin Set

- Slides onto test probes measuring 2 mm
- Tested to 60 V DC

TP40 Automotive Back Probe Pins (five)

- Banana jack accepts all DMM and banana jack leads (4 mm)
- Tested to 60 V DC

Banana Plugs

BP880 BNC to Female Double Stacking Banana Plug

BP880

BP881 BNC to Male Double Stacking Banana Plug

BP881

- Allows for hands-free testing in controlled voltage environments 500 VRMS maximum
- Banana plug is nickel-plated, beryllium copper for low contact resistance
- The BNC shell is plated for tarnish resistance
- Operating temperature +50°C maximum

Pressure Module

PV350 Pressure Vacuum Module

- Compatible with all Fluke and most popular DMMs
- Digital pressure and vacuum measurements in a single module
- Transducer sealed in 316 stainless steel compatible with variety of liquids and gases
- Measures vacuum to 76 cm Hg
- Display results in English (psig or Hg) or metric (kPa or cm Hg) units
- Measures pressure to 500 psig (3447 kPa)

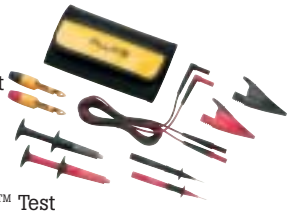
Test Leads

TL28A Automotive Test Lead Set

- Flexible silicone insulated leads are heat and cold resistant
- Cat I 30 V, 10 A

TLK281 SureGrip™ Automotive Test Lead Kit

Kit contains:



- TP81 Insulation Piercing Clip Set
- TL224 Suregrip™ Silicone Test Lead Set
- TP220 Suregrip™ Test Probe Set
- AC220 Suregrip™ Alligator Clip Set
- AC285 Suregrip™ Large Jaw Alligator Clip Set
- Soft Case

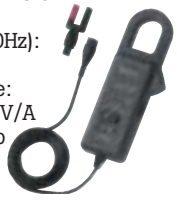
TLK282 SureGrip™ Deluxe Automotive Test Lead Kit

Kit contains:

- TP81 Insulation Piercing Clip Set
- TP40 Automotive Back Probe Pins (five)
- TL224 Suregrip™ Silicone Test Lead Set
- TP220 Suregrip™ Test Probe Set
- AC220 Suregrip™ Alligator Clip Set
- AC285 Suregrip™ Large Jaw Alligator Clip Set
- AC280 Suregrip™ Hook Clip Set
- Soft Case

Current Probe

90i-610s AC/DC Current Probe (600 A)



- Current Range: 2 to 600A DC or AC Peak
- Basic Accuracy (DC to 400Hz): ± (2% of reading + 1A)
- Output Signal: 100A range: 10mV/A 600A range: 1mV/A
- Frequency Range: 40Hz to 400Hz
- Working Voltage: 600V AC rms
- Maximum Conductor Diameter: 34 mm

Inductive Pick-up

RPM80 Inductive Pick-up

- Provides RPM readings

ScopeMeter Accessory Kits

SCC128 Automotive Accessory Kit (120 Series)

SCC198 Automotive Accessory Kit (190 Series)

These kits provide a host of accessories that allow you to easily and quickly make measurements on automotive electronic systems using a 120 or 190 Series ScopeMeter.

All accessories have a one year warranty

Current Clamps

AC Models

i200

i200s

i400

i400s

i1000s

i2000flex

i3000s

Specifications

	i200	i200s	i400	i400s	i1000s	i2000 flex	i3000s
Nominal current range(s)	200 A	20 A 200 A	400 A	40 A 400 A	10 A 100 A 1000 A	200 A 2000 A	30 A 300 A 3000 A
Continuous AC current range	0.5 A - 200 A	0.1 - 24 A 0.5 A - 200 A	5 A - 400 A	0.5 - 40 A 5 A - 400 A	0.1 A - 10 A 0.1 A - 100 A 1 A - 1000 A	2 A - 200 A 20 A - 2000 A	1 A - 30 A 1 A - 300 A 1 A - 2400 A
Highest current	240 A	240 A	1000 A	1000 A	2000 A	4000 A	4000 A
Lowest measurable current	0.5 A	0.1 A	5 A	0.5 A	0.1	2 A	1 A
Basic accuracy (48-65 Hz) [1]	1% + 0.5 A	1.5%+0.5 A	2%+0.15	2%+0.15	1%+1 A	1% F.S.	2%+ 2 A
Useable frequency	40 Hz – 10 kHz	40 Hz – 10 kHz	45 Hz - 3 kHz	45 Hz - 3 kHz	5 Hz – 100 kHz	1 Hz – 20 kHz	10 Hz - 100 kHz
Max. working voltage	600 V AC	600 V AC	1000 V	1000 V	600 V AC	600 V AC	600 V AC
Maximum conductor diameter	20 mm	20 mm	32 mm	32 mm	54 mm	160 mm	64 mm
Output level(s)	1 mA/A	100 mV/A 10 mV/A	1 mA/A	10 mV/A 1 mV/A	100 mV/A 10 mV/A 1 mV/A	10 mV/A 1 mV/A	10 mV/A 1 mV/A 0.1 mV/A
Batttery, battery life						9 V, >100 h.	
Output cable (m)	1.5	2.0	2.5	2.5	1.6	2.3	2.1
Shrouded banana plugs	●		●				
BNC adapter		●		●	●	●	●
BNC to banana adapter included		●		●		●	●
Safety	CAT III, 600 V	CAT III, 600 V	**CAT III 1000V / CAT IV 600 V**	**CAT III 1000V / CAT IV 600 V**	CAT III, 600 V	CAT III, 600 V	CAT III, 600 V

[1] Basic Accuracy: % reading + floorspec

Current Clamp Compatibility Chart

	12	16	110/111/112	175/177/179	187/189	27	45	73 III	77 III	78	83V/87V	88V	867B	43B	430 Series	120 Series	190 Series	715	724	725	741B/743B/744	787	789
AC Models																							
i200				●	●	●	●	●	●	●	●	●	●									●	●
i200s	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●				●	●	●
i400				●	●	●	●	●	●	●	●	●	●									●	●
i400s	2	2		2	2	2	2	2	2	2	2	2	2	●	●	●	●				2	2	2
i1000s	2	2		2	2	2	2	2	2	2	2	2	2	●	●	●	●				2	2	2
i2000flex	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●				●	●	●
i3000s	●	●		●	●	●	●	●	●	●	●	●	●	●	●	●	●				●	●	●
AC/DC Models																							
80i-110s	2	2		2	2	2	2	2	2	2	2	2	2	●	●	●	●				2	2	2
i410	●	●	1	●	●	●	●	●	●	●	●	●	●	●		●	●	1	1	1	●	●	●
i1010	●	●	1	●	●	●	●	●	●	●	●	●	●	●		●	●	1	1	1	●	●	●
Other																							
90i-610s*	2	2		2	2	2	2	2	2	2	2	2	2	●	●	●	●				2	2	2
CS20MA																●	●						
700 IV																					●		

* For specifications of 90i-610s see page 65

1 For DC only

2 Requires PM 9081 (see page 47)

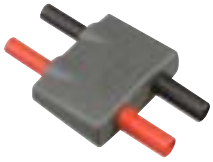
Current Clamps

AC/DC Models

80i-110s

i410

i1010



CS20MA

700-IV

Specifications

	80i-110s	i410	i1010	CS20MA	700-IV
Measurement type	Hall sensor	Hall sensor	Hall sensor	Current shunt	Current shunt
Nominal current range(s),	10 A, AC/DC 100 A, AC/DC	400 A, AC/DC	600 A, AC 1000 A, DC	4 mA – 20 mA	4 mA – 20 mA
Continuous current range	0.1A – 10 A AC/DC 1 A – 100 A AC/DC	1 A – 400 A AC/DC	1 A – 600 A, AC 1 A – 1000 A, DC	0 mA - 20 mA	0 mA - 55 mA
Highest current	140 A – 2 kHz	400 A	1000 A	20 mA	55 mA
Lowest measurable current	0.1 A	0.5 A	0.5 A	0 mA	0 mA
Basic accuracy [1]	3% + 50 mA (@ 10 A)	3.5% + 0.5 A	2% + 0.5 A	0.1%	0.025%
Useable frequency	DC – 100 kHz	DC – 3 kHz	DC – 10 kHz	DC - ≥ 10 kHz	
Zero error adjustment	●	●	●		
Max. working voltage	600 V	600 V	600 V	30 V	30 V
Mazimum conductor diameter	11.8 mm	30 mm 2 x 25 mm	30 mm 2 x 25 mm		
Output level(s)	100 mV/A 10 mV/A	1 mV/A	1 mV/A	10 mV/mA	10 mV/mA
Battery, battery life	9 V, 55 h	9 V, 60 h	9 V, 60 h		
Output cable length (m)	1.6	1.6	1.6		
Shrouded panana Plugs		●	●	●	●
BNC adapter	●				
Safety	CAT II, 600 V CAT III, 300 V	CAT III, 600 V	CAT III, 600 V	30 V	30 V

[1] Basic Accuracy: % reading + floorspec

i410 Kit AC/DC Current Clamp (400A) with soft case

i1010 Kit AC/DC Current Clamp (1000A) with soft case

- Combination of current clamp with carrying case
- Zippered soft case with moveable divider
- Soft case is large enough to hold a meter

i2000flexPQ4 i2000flex AC Current Clamp, 4-pack

- The perfect accessory for three-phase measurement tools such as the Fluke 430 Series
- The flex clamps fit around bus bars and large or hard-to-reach conductors
- Buy 4-pack and save 25% on the price of the individual items

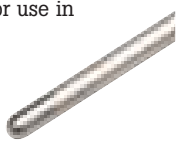
All accessories have a one year warranty

Temperature Accessories

FLUKE®

Contact Probes

80PK-22 SureGrip™ Immersion Probe
- Type-K thermocouple for use in liquids and gels
- Measurement range: -40 to 1090°C



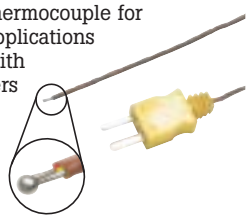
80PK-24 SureGrip™ Air Probe
- Type-K thermocouple for use in air and non-caustic gas measurements
- Bead protected by perforated baffle
- Measurement range: -40 to 816°C

80PK-25 and 80PT-25 SureGrip™ Piercing Probe
- 80PK-25: Type-K thermocouple suitable for food industry, liquids and gels
- 80PT-25 operates with T-type thermometers
- Measurement range:
  80PK-25: -40 to 350°C
  80PT-25: -196 to 350°C

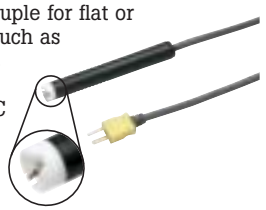
80PK-26 SureGrip™ General Purpose Probe
- Type-K thermocouple with tapered tip for use in air, non-caustic gas and surface applications
- Measurement range: -40 to 816°C

80PK-27 SureGrip™ Industrial Surface Probe
- Type-K thermocouple for surfaces in rugged environment
- Durable ribbon sensor
- Measurement range: -127 to 600°C

80PK-1 and 80PJ-1 Bead Probe
- 80PK-1: Type-K thermocouple for general purpose applications
- 80PJ-1 operates with J-type thermometers
- Measurement range: -40 to 260°C

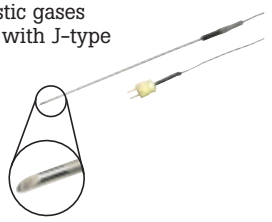


80PK-3A Surface Probe
- Type-K thermocouple for flat or curved surfaces such as plates and rollers
- Measurement range: 0 to 260°C



80PK-8 Pipe Clamp Temperature Probe
- Type-K thermocouple for fast temperature and superheat measurements of pipe surfaces
- Durable ribbon sensor
- Measurement range: -29 to 149°C for pipe diameters from 6.4 to 34.9mm

80PK-9 and 80PJ-9 General Purpose Probe
- 80PK-9: Type-K thermocouple surface, air and non-caustic gases
- 80PJ-9 operates with J-type thermometers
- Measurement range: -40°C to 260°C



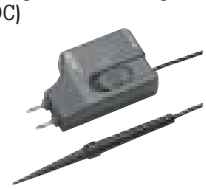
DMM Probes

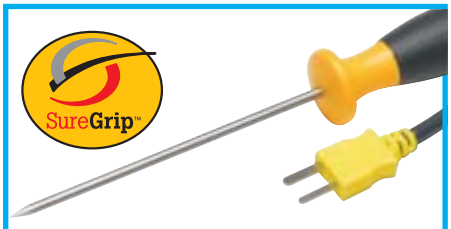
80AK Thermocouple Adapter
- Adapts Type-K thermocouple mini-connector to dual banana plug inputs
- Measurement range and accuracy: probe dependent
- Suitable for low voltage applications (below 30 V AC, 60 V DC)

80BK Integrated DMM Probe
- Type-K thermocouple with standard banana jack
- Convenient one piece construction
- Compatible with DMMs with temperature measurement functions
- Measurement range: -40 to 260°C

80TK Thermocouple Module
- Converts a DMM to a thermometer
- For use with type-K thermocouples in low voltage applications (below 24 V AC, 60 V DC)
- Measurement range: -50 to 1000°C (probe dependent)

80T-150U Universal Temperature Probe
- Compatible with Fluke DMM
- High accuracy, fast reading for low voltage (below 24 V AC, 60 V DC) applications
- Measurement range: -50 to 150°C
- Output: 1 mV/°C or 1 mV/°F (switchable)





SureGrip™ accessories are designed to improve steadiness in slippery hands. Rubber overmolded surfaces and finger-hugging curves give the user a comfortable, reliable grip on the accessory so they can focus on making an accurate measurement.

All accessories have a one year warranty

Other Temperature Accessories

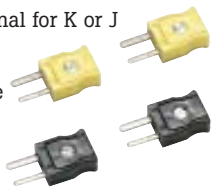
New

80PR-60 RTD Temperature Probe

- For simulaneously taking contact and non-contact temperature measurements with Fluke 66 or 68
- Measurement range: -40 to 260°C

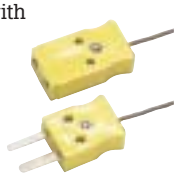
80CK-M & 80CJ-M type K & J Male Mini-Connectors

- Isothermal screw terminal for K or J wire
- Suitable for up to 20 guage thermocouple wire
- Color coded to industry standards (K-yellow, J-black)
- Two per package



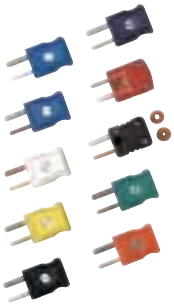
80PK-EXT, 80PJ-EXT and 80PT-EXT Extension Wire Kits

- Extending and repairing J, K ot T-type thermocouple wires
- Kit includes 3 meters of thermocouple wire and 1 pair of male/female mini-connectors
- Maximum continuous exposure temperature: 260°C
- 80PK-EXT is compatible with K-type thermometers, 80PJ-EXT is designed for J-type thermometers and PT-EXT for T-type thermometers



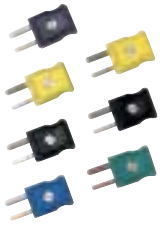
Thermocouple Plug Kits 700TC1

A kit of 10 mini-plug connectors
Type J (black), one
Type K (yellow), one
Type T (blue), one
Type E (purple), one
Type R/S (green), one
Type B or CU (white), one
Type L (J-DIN) (blue), one
Type U (T-DIN) (brown), one
Type C (red), one
Type N (orange), one



700TC2

A kit of 7 mini-plug connectors
Type J (black), two
Type K (yellow), two
Type E (purple), one
Type T (blue), one
Type R/S (green), one



Temperature Probe Compatibility Chart

	12	16	110/111/112	175/177	179	187/189	27	45	73 III	77 III	78	83V	87V	88V	867B	43B	120 Series	190 Series	51/52/53/54 II	66/68	705 / 707(Ex)	714	715	724	725	71B/743B/744	787	789
Contact Probes																												
80PK-1 … 80PK-27	1	2	1	1	2	2	1	1	1	1		1	2		1	1	1	1	●		1	●	1	●	●	●	1	1
80PJ-1, 80PJ-9																			●			●		●	●	●		
80PT-25																			●			●		●	●	●		
DMM probes																												
80AK		●			●	●							●															
80BK		●			●	●							●															
80TK	●		●	●			●	●	●	●		●			●	●	●	●			●		●			●	●	●
80T-150U	●	●	●	●	●	●	●	●	●	●		●	●		●	●	●	●			●		●			●	●	●
Miscellaneous																												
80CK-M, 80CJ-M																			●			●		●	●	●		
80PK-EXT, 80PJ-EXT																			●			●		●	●	●		
80PT-EXT																						●		●	●	●		
700TC1, 700TC2																						●		●	●	●		
80PR-60																				●								

1) Requires 80TK
2) Requires 80AK

Cases and Holsters

Soft Cases

C12A Meter Case
- Zippered carrying case with inside pockets and belt loop

C25 Meter Case
- Zippered carrying case with padding and inside pocket

C43 Meter Case
- Zippered carrying case with inner front pocket, removable handle/shoulder-strap
- Ideal for large meters

C50 Meter Case
- Zippered carrying case with inside pocket belt loop and inside meter strap

C75 Accessory Case
- Zippered carrying case with 2 inside pockets

C90 Meter Case
- Zippered carrying case with inside pocket and belt loop

C125/C781 Meter Case
- Zippered carrying case with detachable external pouch

C195 Case
- Zippered carrying case with storage compartments
- Allows hand or shoulder use

C789 Meter & Accessory Case
- Large fabric carrying case with 3 compartments, removable handle and shoulder strap

C550 Tool Bag
- Steel reinforced frame
- Rugged ballistic cloth with heavy duty hardware
- Large zippered storage compartment with 25 pockets
- Weather resistant
- Carry all your tools to the job

Cases & Holsters Compatibility Chart

		12	16	110/111/112	175/177/179	187/189	27	7-600	73 III	77 III	78	83V / 87V	867B	T3/T5	321/322	333/334/335/336/337	1520	43B	120 Series	190 Series	51/52/53/54 II	63/65/68	705 / 707(Ex)	712	714	715	717	718(Ex)	724	725	741B/743B/744	787	789
Soft Cases	**Size (HxWxD) mm**																																
C12A	172 x 128 x 38	●	●					●															●										
C25	218 x 128 x 64					●	●		●	●	●	●									●			●	●	●	●		●	●		●	●
C43	318 x 230 x 90																●	●	●									●	●	●				
C50	192 x 90 x 38			●					●	●	●										●												
C75	179 x 103 x 26	For multiple test leads and accessories																															
C90	205 x 90 x 72				●				●	●		●												●	●	●	●					●	
C125	192 x 141 x 58					●							●					●	●									●	●	●			●
C195	231 x 513 x 231												●					●	●	●													
C781	269 x 141 x 90					●							●					●	●									●			●		●
C789	308 x 256 x 77																	●	●									●			●		
C550	333 x 513 x 231	For multiple meters, accessories or other tools																															
Hard Cases																																	
C20	256 x 154 x 106						●																										
C100	397 x 346 x 122	●	●		●		●	●	●	●	●	●												●	●	●	●					●	
C120	346 x 397 x 128																	●	●														
C190	410 x 474 x 135																			●													
C800	230 x 385 x 115	●	●				●	●	●	●	●	●												●	●	●	●					●	
C1600	260 x 390 x 200	For multiple meters, accessories or other tools																															
Leather Cases																																	
C510	287 x 179 x 106	●	●	●	●	●		●	●	●	●	●									●			●	●	●	●		●	●		●	●
C520A	256 x 154 x 106													●																				
Holsters																																	
C10	154 x 77 x 45	●	●					●															●										
C70Y	186 x 90 x 45								●		●																						
H80M	190 x 95 x 43											●												●	●	●	●					●	
Other																																	
H3	231 x 90 x 64														●	●																	
H5	192 x 90 x 38													●																			
H6	302 x 178 x 57																					●											
SH100																	●																
Hanging and Locking Kits (see page 72)																																	
ToolPak			●	●	●	●				●			●								●		●	●	●	●	●		●	●		●	
LockPak						●																							●	●			●

Cases and Holsters

Hard Cases

C20 Meter Case
- Heavy duty case with carrying handle and accessories storage compartment
- Top cover snaps onto back to serve as tilt stand

C100 Meter and Accessory Case
- Tough polyprophylene case

C120 and C190 Cases
- Heavy duty cases with accessory storage compartments

C800 Meter and Accessory Case
- Tough polyprophylene case
- Accessories and manual compartments
- Detachable lid

C1600 Meter and Accessories Case
- Rugged molded plastic case
- Deep interior large enough to hold and protect your tools
- Lift out tray keeps everything organized
- Snap open compartment on top of lid

Holsters

C10 Meter Holster
- Snap-on yellow holster absorbs shocks and protects meter from rough handling
- Includes built-in stand and hanger loop

C70Y Meter Holster
- Snap-on holster absorbs shocks and protects meter from rough handling.
- Flex Stand™ allows meter to hand, lean or stand for convenience and best viewing
- Built-in probe and lead storage

H80M Holster + Magnetic Hanger
- Snap-on yellow holster absorbs shocks and protects meter from rough handling
- Magnet, hook and loop straps
- General purpose hanger

H3 Clamp Meter Holster
- Fabric holster absorbs shocks and protects meter from rough handling.
- Built-in pocket for lead storage
- Convenient belt-loop with snap

H5 Electrical Tester Holster
- Rugged fabric holster includes flap for lead storage and built-in belt loop
- Fits Fluke T3 and T5 testers

H6 Infrared Thermometer Holster
- Durable nylon holster
- For Fluke 63, 65 and 68 Infrared Thermometers

Leather Cases

C510 Leather Meter Case
- Oiled genuine top grain cowhide
- Rugged construction with heavy duty stitching and reinforced rivets
- Large tool belt loop and top flap to secure meter
- Holds most Fluke DMMs, Thermometers, and Process Calibrators

C520A Leather Tester Case
- Oiled genuine top grain cowhide
- Oil tanned for long life
- Rugged construction with heavy duty stitching and reinforced rivets
- Large tool belt loop and top flap to secure tester
- Holds Fluke Electrical Testers

Shoulder Strap

SH100 Shoulder Strap
- Shoulder strap for Fluke 1520

Meter Cleaners

MC6 MeterCleaner™ Wipes (6-pack)

MC50 MeterCleaner™ Wipes (50-pack)
- Pre-moistened wipe removes dirt, oil and grease
- One wipe easily cleans one meter
- Safe on rubber, plastic and for environment (non-toxic)

All accessories have a one year warranty

Other Accessories

Fiber Optics

FOC Fiber Optic Patch Cords
A variety of patch cords allow you to test a different type of cable
- FOC-ST/ST, FOC-ST/FC, FOC-ST/SC, FOC-ST/SMA, FOA-ST/STA-Fiber Optic Coupler for FOC-ST/ST Patch Cords

FOM Fiber Optic Meter
The Fluke Fiber Optic Meter (FOM) helps you test and maintain fiber optic cable without having to buy a whole new meter. Plug the FOM directly into any DMM with a mV dc function and a 10 MΩ input impedance and quickly and accurately verify fiber optic cable system loss. Light sources and patch cords sold separately.

FOS 850 & FOS 850/1300 Fiber Optic Light Sources
A variety of light sources allow you to test different cable lengths.

Hanging & Locking Kits

ToolPak (TPAK)
The meter hanging solution
- Kit includes, universal hanger clips (2), hook & loop straps (2 lengths) and strong magnet
- Combine components to meet most hanging needs

See page 70 for compatibility chart

LockPak (LPAK)
The meter locking solution
- Kit includes a locking accessory
- Attaches to back of a 187/189 meter or 724/725/789 to help deter theft
- Accepts most common locks (not included)

Lights

L200 Probe Light
- Attaches to any Fluke test probe
- Bright white LED
- 120 hours of battery life

L205 Mini Hat Light
New

Rugged high-intensity Xenon worklight
- Attaches to a baseball cap
- Includes a hat clip
- Includes two AAA batteries
- Waterproof

L206 Deluxe LED Hat Light (hard hat not included)
New

Attach it to a hard hat, a baseball cap, or even a panel door for all the light you need.
- 3 super bright white LEDs – never burn out
- Special hard-hat attachment included
- 40-hour battery life
- Includes three AAA batteries

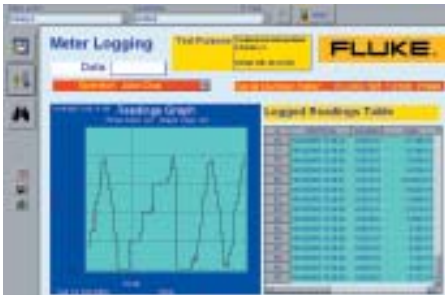
L210 Probe Light + Probe Extender
- Includes L200 Probe Light and TP280 Test Probe Extenders
- 20 cm probe extenders keep hands away from live circuits
- Extender fits between modular test probe and test lead (total reach 30 cm)

LVD1 Volt Light
New

Dual sensitivity voltage detector
- Detects voltage from 40 V to 300 V AC
- Blue light means you're close
- Red light means you're at the source
- Comes with a versatile clip to secure light to pocket, hat or even panel door

Sofware FlukeView® Forms

FlukeView Forms increases the power of your Fluke Digital Multimeter, Thermometer and ProcessMeter by enabling you to document, store and analyze individual readings or series of measurements, then convert them into professional-looking documents. FlukeView Forms supports the following meters:
- Fluke 180 Series Digital Multimeters (Model FVF-SC2)
- Fluke 87-IV & 89-IV Digital Multimeters (Model FVF-SC1)
- Fluke 53-II & 54-II Thermometers (Model FVF-SC1)
- Fluke 45 Bench Meter (Model FVF-SC3)
- Fluke 789 ProcessMeter™ (Model FVF-SC2)
- Fluke 1653 (Model FVF-SC2 release 2.2 and higher)



All accessories have a one year warranty

Fuse and Warranty Information

Fuse Replacement Information

A	V	IR	Size in mm	Part nr qty 1
125mA	250V		5x20	4822 070 31251
440mA	1000V	10kA	10.3x34.9	943121
500mA	250V	1500A	5x20	838151
630mA	250V	1500A	5x20	740670
1A	600V	10kA	10.3x34.9	830828
1.25A	500V		6.35x32	2030852
3A	600V	10kA	10.3x38.1	475004
3.15A	500V		6.35x32	2040349
11A	1000V	17kA		Replaced by 11A, 1000V, 20kA fuse; 803293
11A	1000V	20kA	10.3x38.1	803293
15A	600V	100kA	10.3x38.1	820829
20A	600V	Replaced by 15A, 600V, 100kA fuse; part nr. 820829		

See the back of your Fluke test tool or user manual for the fuses installed.
For manuals check the Fluke website in the product section.
For Fuse Replacement Guide check the Fluke website in the service section.

TTi
www.tti.co.uk
Tel: 01480 412451

Product Warranty

Each Fluke product is warranted to be free from defects in material and workmanship under normal use and service, for the warranty period listed unless local law requires a longer period. The warranty period is listed in the ordering information section of the product specification and begins on the date of shipment. This warranty extends only to the original buyer or end-user customer of a Fluke authorized reseller, and does not apply to fuses, disposable batteries or to any product which, in Fluke's opinion, has been misused, altered, neglected or damaged by accident or abnormal conditions of operation or handling. Fluke warrants that software will operate substantially in accordance with its functional specifications for 90 days and that it has been properly recorded on non-defective media. Fluke does not warrant that software will be error free or operate without interruption.

Lifetime Warranty
Each Fluke 20, 70, 80, 170 and 180 Series DMM purchased after October 1, 1996 will be free from defects in material and workmanship for its lifetime. This warranty does not cover fuses, disposable batteries and damage from accident, neglect, contamination, misuse or abnormal conditions of operation or handling, including overvoltage failures caused by use outside the DMM's specified rating, or normal wear and tear of mechanical components. This warranty covers the original purchaser only and is not transferable. For ten years from the date of purchase, this warranty also covers the LCD. Thereafter, for the lifetime of the DMM, Fluke will replace the LCD for a fee based on then current component acquisition costs.

To establish original ownership and prove date of purchase, please complete and return the registration card accompanying the product.

Service

Fluke will, at its option, repair at no charge, replace or refund the purchase price of a defective product purchased through a Fluke authorized sales outlet and at the applicable international price. Fluke reserves the right to charge for importation costs of repair/replacement parts if product purchased in one country is sent for repair elsewhere.

Send defective product with a description of the problem to the nearest Fluke Authorized Service Center, postage and insurance prepaid. Fluke will pay return transportation for product repaired or replaced in-warranty. Before making any non-warranty repair, Fluke will estimate cost and obtain authorization, then invoice you for repair and return transportation.

THIS WARRANTY IS YOUR ONLY REMEDY. NO OTHER WARRANTIES, SUCH AS FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSED OR IMPLIED. FLUKE IS NOT LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, ARISING FROM ANY CAUSE OR THEORY. AUTHORIZED RESELLERS ARE NOT AUTHORIZED TO EXTEND ANY DIFFERENT WARRANTY ON FLUKE'S BEHALF.

Since some states do not allow the exclusion or limitation of an implied warranty or of incidental or consequential damages, this limitation of liability may not apply to you.

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Fluke Corporation
P.O. Box 9090
Everett, WA USA 98206

Fluke Europe B.V.
P.O. Box 1186
5602 BD Eindhoven
The Netherlands

For more information call:
In the U.S.A. (800) 443-5853
or Fax (425) 446 -5116
In Europe/M-East/Africa +31 (0)40 2 675 200
or Fax +31 (0)40 2 675 222
In Canada (905) 890-7600
or Fax (905) 890-6866
From other countries +1 (425) 446 -5500
or Fax +1 (425) 446 –5116

Visit us on the world wide web at:
http://www.fluke.com

Fluke (UK) Ltd.
52 Hurricane Way
Norwich
Norfolk
NR6 6JB
United Kingdom
Tel.: 0207 942 0700
Fax: 0207 942 0701
E-mail: industrial@uk.fluke.nl

Visit us on the world wide web at:
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Thurlby Thandar Instruments Ltd. Glebe Road, Huntingdon, Cambs. PE29 7DR U.K.
Tel: 01480 412451, Fax: 01480 450409**,** e-mail: sales@tti-test.com
Web: **www.tti-test.com** or **www.tti.co.uk**